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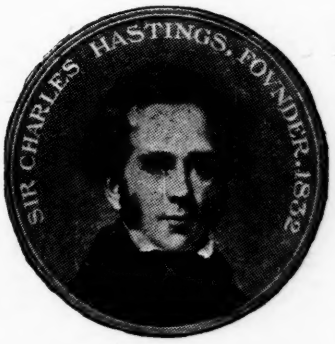

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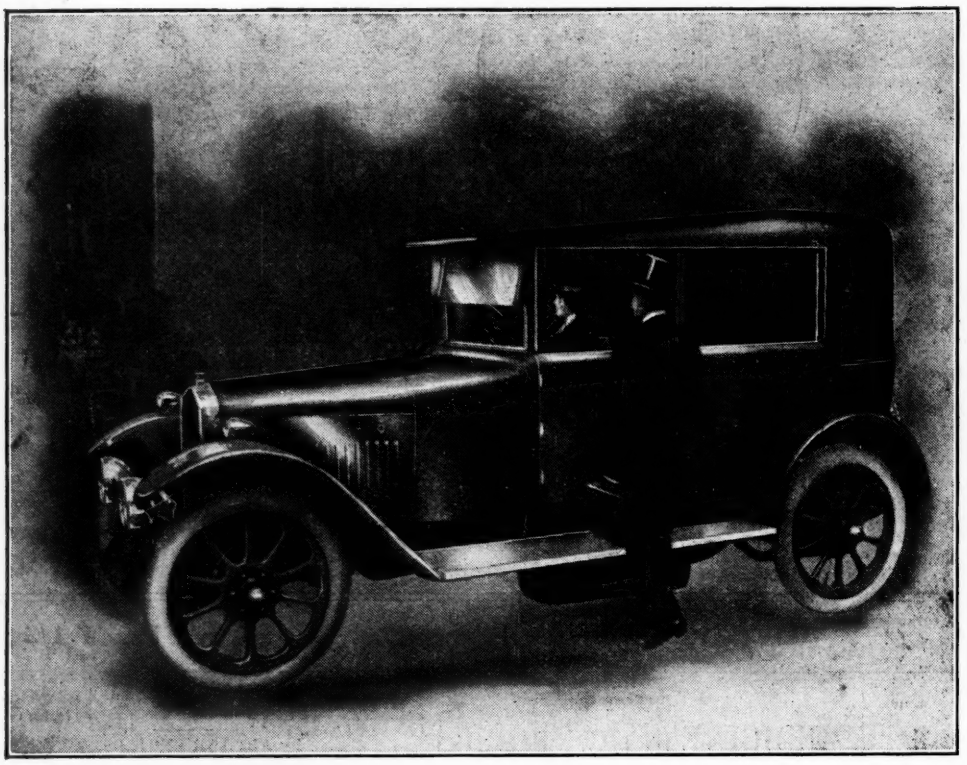

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A British Medical Association Lecture

ON

MINOR DISPLACEMENTS OF THE UTERUS AS A CAUSE OF DISABILITY IN WOMEN.

BY

JOHN S. FAIRBAIRN, M.A., M.B., F.R.C.P.,

OBSTETRIC PHYSICIAN, ST. THOMAS'S HOSPITAL; LECTURER ON MIDWIFERY AND DISEASES OF WOMEN, ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.

In disorders of the female pelvic organs, as in general medicine, the cause is readily determined if there is an obvious gross lesion, such as an inflammatory mass or new growth, but difficulty arises when evidence of localization is uncertain and physical signs absent or trifling. The problem is then one of interpreting the meaning and estimating the importance of some minor deviation from the average, and deciding whether it falls within the limits of normal anatomical variation or can be held responsible for the patient's symptoms.

There is a personal factor in the interpretation of symptoms with little in the way of physical signs, and among gynaecologists, as among physicians and surgeons, there will be many individual differences of opinion. There are two extremes—the mechanical school and the psychical school: the former will find for all disorders of function, particularly in the abdomen and pelvis, some kink or twist or displacement which satisfies them as the cause of the trouble, while the latter will ascribe the chief part in the production of the patient's disability to some subconscious mental process or repressed or unrepressed sexual desire. No doubt as time goes on the true mean between these extremes will be reached, but meanwhile the bent of mind of the individual observer will largely determine on which of these factors the stress will be laid.

I propose to discuss this afternoon the minor displacements of the uterus—that is, excluding obvious descent—and to attempt to estimate their importance as a cause of disability in women.

Looked at from the historical aspect, it will be seen that uterine displacements came into special prominence in the mid-Victorian era—a time when it was exceedingly difficult for a woman to have her uterus just as it ought to be, as it was thought that its proper position should be in the axis of the pelvic inlet; if it was in front of that position it was looked upon as anteverted or anteflexed, and if behind as retroverted or retroflexed. Now all displacements have died a natural death except the backward one, which, as the last survivor, has inherited all the wealth of the family in the way of symptoms. An index of the change in attitude towards these uterine displacements can be obtained by glancing at the edition of *A System of Gynaecology*, edited by Allbutt and Playfair, published in 1896, and its successor, *A New System of Gynaecology*, by Eden and Lockyer, published in 1917. In the 1896 edition Professor A. R. Simpson of Edinburgh describes in detail uterine displacements, forward, and backward, and sideward, so that we find mentioned even dextro- and sinistro- versions and flexions, though with an obvious mental reservation as to whether the anterior displacements ought not to be eliminated altogether from the category of uterine disorders. In the *New System of Gynaecology* of 1917 the displacements have disappeared entirely, except the backward, which is the only one considered. The author of the article, Professor Chipman of Montreal, summarizes his views as follows:

> "All these signs and symptoms may be found with no retroversion whatever, for these may result from altogether different causes. Their presence is in no sense pathognomonic of this, or of any uterine displacement, and so the displacement may be but a coincidence and possess no etiological significance whatever.
>
> "In actual practice it is fair, I think, to regard retroversion of the uterus unaccompanied by prolapse as of no importance save only as a certain predisposition towards prolapse. It is specially wise in these cases to treat the symptoms of which the patient may complain upon general and broad lines, rather to avoid than encourage local treatment, and only if the general treatment fail—and this in my experience will rarely be the case—is one to attend in any way to the 'backward displacement.'"

What was not appreciated by the older gynaecologists was that the uterus is an organ which is liable to great variation in position as the result of changes in the surrounding viscera and in the intra-abdominal pressure, that its blood supply and attachments are arranged to permit of its being either a pelvic or abdominal organ, and that it is perfectly comfortable with its fundus on the pelvic floor or just under the diaphragm. It is now generally recognized that its position, *quâ* position, is of no clinical importance, and that what we have to look for is the cause of the unusual position and consider whether that cause is one requiring treatment. The most common cause of retroversion is prolapse of the pelvic floor, of which the uterus forms part; usually retroversion with descent is the first indication of prolapse. Infections, including subinvolution, are a cause of simple and fixed retroversion; growths, such as ovarian cysts and uterine fibroids, are another cause of displacement of the uterus; and a rarer cause is maldevelopment, occasionally seen in nulliparae.

Retroversion is very common in multiparae, and is occasionally met with in nulliparae when examined for dysmenorrhoea or sterility, or because of symptoms which might have a pelvic origin. In the latter the backward position is classed as a congenital peculiarity, but until figures can be obtained by investigation of large numbers of healthy girls and women so as to obtain an idea of the frequency of the retroverted, as compared with the anteverted, position, it is impossible to dogmatize on its clinical importance. It may tend to sterility and abortion; though occasionally found when dilating for dysmenorrhoea, it is very much rarer than the usual anteverted and anteflexed position, so that, until statistics as to the percentage of dysmenorrhoeics with backward and with forward position of the uterus are obtained and compared with the incidence of these positions in nulliparae generally, it is impossible to make positive statements. Some of these retroverted and retroflexed uteri in virgins with dysmenorrhoea are small and infantile and associated with scanty menstruation, just as is seen with the small anteverted and anteflexed uterus, and thus it would appear that incomplete development, and not the forward or backward position, is the determining factor in the production of dysmenorrhoea.

In parous women the uterus is often found to be retroverted because pregnancy and labour and lying-in are the factors which tend to produce this position; in multiparae with a relaxed abdominal wall and enteroptosis the backward is almost as common as the forward position. The softening of the uterus and its attachments and the stretching of ligaments and muscles during pregnancy, the further stretching and laceration during labour, the dorsal position, overdistension of the bladder, the assumption of the erect position and the resumption of work before involution is complete, are all predisposing factors.

It may be worth while to consider in detail the symptoms commonly ascribed to the backward displacement.

Backache, a symptom of nearly every pelvic disturbance, is probably more common among women with retroversion than anteversion because of the frequency with which abdominal wall and pelvic floor weakness, enteroptosis, subinvolution, and other enlargements of the uterus are associated with a backward position. As backache is largely a fatigue effect and the symptom *par excellence* of the tired woman possibly this fatigue may appear earlier when the uterus is back than when forward, and, if so, probably because of the associated conditions rather than the mere uterine position.

Bearing down is a sensation so closely associated with weakness of the sustentacular structures that its occurrence with retroversion should at once suggest that pelvic floor weakness is the cause, and that the position of the uterus represents an early stage of prolapse. With a lowered resistance to disagreeable sensations, other varieties of aching and pain will occur as an early result of fatigue, and are commonly attributed to retroversion, if it happens to be present.

Menorrhagia is another symptom said to be more common among women with retroverted than with anteverted uteri. There is an armchair hypothesis, generally swallowed without much hesitation, that pelvic pain and aching, menorrhagia, and leucorrhoea are due to a uterine congestion from an obstruction to the venous return. Beyond the fact that such theory forms a reasonable explanation for the above symptoms, and that these symptoms are sometimes cured by the uterus being supported in anteversion, I know of no observations in support of this hypothetical passive congestion and many points which it leaves unexplained. This menorrhagia is quite haphazard in its occurrence, and the majority of women with retroversion do not suffer from it; there is no naked-eye or other evidence of passive congestion observed when operating, by abdomen or vagina, in cases in which the uterus is retroverted; the remote

pathological effects of a chronic venous congestion are not seen in old-standing retroverted uteri; on the other hand, the hyperplasia of the cervix in prolapse is the effect of a passive congestion, which, however, does not produce menorrhagia. Menorrhagia from this presumed congestion is absent from, and is not characteristic of, the uterus pushed backwards by an ovarian cyst or other tumour in front of it, a condition in which obstruction to the venous return would appear more likely than in a simple retroversion.

Leucorrhoea is another symptom which it is not possible to say is relatively more common with retroverted than anteverted uteri; it is certainly almost invariable with retroversion and subinvolution, and with laceration and infection of the cervix. There is no proof that the retroverted position, apart from laceration and infection, increases the uterine secretions.

Dysmenorrhoea of the so-called congestive type, explained also on the presumption of a venous congestion, is a rare accompaniment of simple retroversion, and, when present, is commonly due to some complicating infective process.

Disturbances of micturition are not caused by a simple retroversion. Retention may result from the incarceration in the pelvis of a retroverted uterus, enlarged by pregnancy or fibroids to a size big enough to cause impaction; incontinence on coughing or straining may accompany retroversion with trifling pelvic floor descent; frequency does not result from a simple retroversion.

Pressure on the rectum and tenesmus are occasionally complained of, and constipation is sometimes attributed to the two-ounce uterus leaning against the rectum. If the index finger is passed into the bowel and the finger-tip merely bent forwards against the fundus felt through the anterior rectal wall, it will suffice to raise the uterus from the bowel; it is difficult, therefore, to imagine how the progress of a faecal mass weighing much more than two ounces and propelled by peristalsis would be hindered. Haemorrhoids have also been attributed to the uterus lying back and pressing on the haemorrhoidal veins, and it cannot be denied that constipation and haemorrhoids are common in women with retroversion, as they are in women without it.

Dyspareunia is sometimes present with the uterus retroverted as it is with the uterus anteverted. It is probably due to prolapsed ovaries or to accompanying inflammation and not to the uterine position itself.

General disturbances—headache, sickness, indigestion, and abdominal pain—have all been included as counts in the indictment of the backward displacement, but without any justification whatsoever, owing to too much concentration on the mechanical factor and entirely overlooking the question of fatigue of mind and body and what it may produce. So much loose thinking has been associated with the subject of "displacements" that statements begging the whole question are frequently made, and quite seriously, in medical papers and in discussions at societies—as, for example, that "retroversion requires treatment when it causes symptoms." On inquiry these symptoms will be found to vary with the fancy of the individual, and may be widespread enough to include uterine headaches and indigestion and perhaps even a uterine cough.

If a somewhat similar reasoning to that of the postulates for proving the causative bacterial agent in an infective disease were attempted it would fail to show any connexion between retroversion and the symptoms attributed to it. First, because there is no symptom-complex peculiar to retroversion; second, because such symptoms as are ascribed to the retroversion do not occur invariably, but only occasionally; and finally, because changing the position to an anteversion does not necessarily do away with the symptoms ascribed to the displacement. I once tried to keep a record for the instruction of my students of those women coming to the gynaecological out-patient department with simple retroversion without symptoms, of those with the traditional symptoms and no retroversion, and of those with the retroversion and no symptoms. Unfortunately my figures were destroyed in a spring cleaning epidemic, and all I can remember is that the largest group was that of women with the supposed symptoms but without retroversion. Statistics from a gynaecological department are, however, of little value, as the routine examination of women without pelvic trouble is necessary to a knowledge of the frequency of retroversion without symptoms. Figures are given, varying between 15 and 30 per cent., of the proportion of women in whom the uterus is deviated backward, and attempts have been made to estimate the proportion in which the retrodeviation caused disability, but naturally are valueless because they represent merely the personal view of the observer.

Individual opinion can be eliminated, however, by noting the gradual disappearance of "displacements" from the time of their vogue and predominance in gynaecology—a time aptly summarized in Clifford Allbutt's remark that "the uterus could justly complain that it was always being impaled on a stem or perched on a twig"—to the present day, when the retro-deviations alone obtain a grudging and hesitating adherence from writers in textbooks and treatises. The reason they have survived so long is twofold: first, retroversion is present with other pelvic conditions causing disability, in which the position of the uterus is often the most striking feature on examination; and secondly, that due importance has not yet been given to the psychical factor and fatigue by those who cannot look beyond anatomical variations. It may be thought that if retroversion is part of pelvic floor prolapse or subinvolution it matters little if the woman's disability is ascribed to the position of the uterus, but further consideration will show that the point is important.

Those who have been brought up on and have accepted the displacement doctrine will consider retroversion as capable of explaining symptoms it cannot cause, and will be satisfied with it as an explanation of acute pelvic pain, uterine haemorrhage, intestinal stasis, and even partial obstruction, and look no farther for a cause. A retroverted uterus may readily be mistaken for a small swelling adherent to the back of the uterus, and I have known of a tubal gestation, an inflammatory swelling in the pouch of Douglas, and a rectal carcinoma being taken for a retroverted uterus because of the idea that this position of the uterus could be responsible for the patient's symptoms. Not only are errors in diagnosis made more likely but wrong treatment follows if attention is directed solely to the position of the uterus. The displacement myth has produced far more invalidism and inefficiency in women than any good it has ever done. The knowledge that her womb is "misplaced" or "twisted" is a source of mental distress to the unfortunate woman who is treated for it; the wearing of a pessary and its frequent changing concentrates her attention on her pelvic organs, and she becomes convinced of her uterine weakness, which must always be considered and prevents her doing what others do. Thus is the pelvic neurasthenic manufactured, particularly among single women.

I would suggest that we follow Sir Thomas Browne's dictum that "knowledge is made by oblivion, and to purchase a clear and warrantable body of truth, we must forget and part with much we know," and I would urge that the time has come to let the backward positions of the uterus go the way of the other displacements.

In child-bearing women many of you know from your own experience that backache and bearing down are relieved by replacement of the uterus and a pessary, because, as already explained, the symptoms are caused by strain on the supporting structures. In virgins the problem is quite different, and I would lay it down as a rule that in their case pessary treatment should never be adopted; the cases in which it might be justifiable are too exceptional to affect the general applicability of the rule. In nulliparous married women temporary pessary treatment may be tried for sterility and repeated miscarriages.

In the parous woman simple retroversion is often found with an unusually mobile uterus and ptosis of the contents of the abdomen and laxity of the wall. With general enteroptosis the backward position is more common than the forward, and must be looked on as merely a fraction of the general relaxation; it would therefore show a wrong perspective of the case to concentrate solely on the uterus to the neglect of the general abdominal condition. In many cases there is also weakness and descent of the pelvic floor. The bulky subinvoluted and retroverted uterus following labour is to be treated as primarily subinvolution and chronic infection, but, as will be seen later, benefit may come from its being supported, as subinvolution affects its ligamentary attachments as well.

The cases which the practitioner treats with success as cases of retroversion are almost entirely cases of slight pelvic floor injury and subinvolution, often complicated by overwork and overstrain with fatigue symptoms. The treatment of such cases is worth detailed consideration, as success largely depends on general management as well as relieving the pelvic condition.

The preventive treatment is clearly good midwifery,

avoiding laceration and infection, and a physiological management of the puerperium. During the lying-in time measures directed towards the promotion of normal and complete involution should be adopted. The patient should be encouraged to sit up and move about in bed. The binder, which restricts the movements of the abdominal muscles, should be discarded as soon as possible, certainly within a week, and massage and breathing exercises begun as soon as the free lochial discharge has lessened and the patient's general condition allows. When the fundus uteri has sunk down so that it is only just palpable in the abdomen, the woman should be encouraged to assume the knee-elbow position for short intervals and afterwards to lie prone for a time. While in the knee-elbow position a good exercise is to make her contract her levator ani muscles by the action of "squeezing up as if to hold a motion." In this position the strain on the pelvic floor is at its minimum, and the muscles therefore work at an advantage. Another exercise for restoring the efficiency of the levator muscles may be carried out with the patient on her back by combining their contraction with that of the adductors of the thigh. The nurse may be instructed to resist adduction by placing her hands on the inside of the knee while the patient tries to bring her knees together, the resistance being slight at first and increasing as time goes on. Indeed, all muscular exercises, particularly of the abdominal, flank, back, and thigh muscles, are valuable by improving the circulation and physical condition. Breast feeding, in addition to its importance to the infant, should be encouraged for its effect in aiding involution. Though the lying-in mother requires two, or if possible three, weeks of a rest cure after the strain of pregnancy and labour, and as a preparation for the nursing and care of her infant, that time should not be one in which her muscles are allowed to become soft and flabby, so that they are incapable of performing their functions when she gets up, and nothing is so valuable as resisted muscular movements. By aiding the recovery of the abdominal and pelvic musculature and keeping up the general physical condition whilst giving the mother rest and relief from household duties and strains much can be done to lessen the frequency of retroversion and descent of the uterus, with the backache, forcing down sensations, and early fatigue that detract from the efficiency of so many mothers after child-bed.

When advice is sought for symptoms of this nature shortly after labour, and a bulky retroverted uterus is discovered on bimanual examination, it should be replaced and kept in position by a pessary. This is, however, but a small part of the management of such cases. The support by the pessary will probably allow of outdoor exercise being taken so that the general physical condition may be improved. Relief from indoor and exacting duties may be difficult to secure, but is a more essential matter than the pessary. If, as is usually the case, the patient is a tired and overwrought woman, a pessary is a poor substitute for the rest she needs. It is in regard to this type that the concentration on the mere position of the uterus so often fails to restore the woman to efficiency. Many of these tired mothers are referred to me because the position of the uterus is pitched on as the very head and front of the offending. On investigation the woman may have four or five young children, and little help with them and her household duties; she has a holiday of a few weeks each year, but the only change to her is one of venue, from her own house to rooms at the seaside, where escape from the children is even more difficult than at home. Perhaps she has never had more than a day or two's relief from her family cares, and it is not surprising that she should have the characteristic symptoms of the tired mother, that she is depressed and unfitted for her duties by aching back and legs. It matters little that her uterus is retroverted—it has been so for years; but it matters a great deal that she has relief from the constant strain that has worn her out and that her physical condition as a whole is improved.

Some of these women with simple retroversion have all the subjective sensations of prolapse; indeed, they often come with the complaint that "the womb drops," though they have no protrusion and nothing is discovered on examination, except that the uterus is lying back and perhaps a little low. Doubtless the symptoms are due to pelvic floor weakness with strain on the uterine supports. Great relief is usually effected by replacement and a pessary, by exercises similar to those described for the lying-in mother, by graduated outdoor exercise short of fatigue, and relief from the day-in and day-out strain of family and household.

In the course of three or six months, if the physical and nervous condition has improved, the pessary can be left out. Such patients are liable to a return of their symptoms when run down or overtired, and some will ultimately develop definite prolapse, for which operative treatment will be required. The point I wish to emphasize in regard to these and similar cases is that pessary treatment alone will not suffice, but exercises and general management of the patient are essential to success.

Pessaries are valuable for temporary use—to give support till the patient's condition has so far improved that they are no longer needed. If the disability returns after removal of the pessary, some surgical procedure is far better than permanent pessary life.

The multitude of pessaries, intrauterine and vaginal, which marked the displacement era of sixty years ago, have almost all disappeared into museums as antiquities or curiosities, and now the ring is almost the only survivor. In the surgical area through which we are now passing the modern counterpart of the pessary inventor is the deviser of suspensory and sling operations on the uterus. The variations in detail of these procedures are legion, and the woman with a uterus that will not sit up straight can have a tuck taken in its round ligaments, or have it held up by the ligaments being stitched to the abdominal wall, or delicately supported by the ligaments being clasped behind its back, and so on *ad infinitum*. The attitude of mind of these suspenders of the uterus is precisely that of the mid-Victorian pessary-monger; their methods only have changed with the times, and these operations are quite as much overdone as the pessaries were, but do less harm. There is not the bad mental effect of continuous pessary wearing with the recurrent need for changing, and there is the advantage that the patient has two or three weeks in bed with a change and convalescence, together with the strong suggestion that now her errant womb has been made right she also ought to be right.

Many of the women on whom such operations are done have an oversensitive nervous system, and at a time when their powers of resistance to disagreeable stimuli and sensations of fatigue are particularly low, owing to illness or overstrain, they are examined, the uterus found in the retroposed position, as it had been for long past, and an operation is promptly performed. When there is a fixed retroverted uterus with chronic inflammation an abdominal operation is necessary for the removal of the affected tubes, and it is as well to fix the uterus up at the same time. Suspensory operations may also be tried for sterility and repeated miscarriages, and in single women to get rid of a pessary or as a measure of desperation when all else has failed. Though they may be combined with operations for prolapse, alone they are not sufficient for that condition.

SUMMARY.

In case the arguments of my paper should not be obvious, its chief points may be summarized as follows:

1. Always look beyond the mere position of the uterus and do not ascribe symptoms to retroversion.

2. In retroversion accompanying pelvic floor prolapse, subinvolution, pelvic inflammation, and tumours, the disability is due to the primary condition and not to the position of the uterus.

3. Retroversion after child-bearing with subjective symptoms of prolapse is correctly treated by replacement of the uterus and a pessary, provided the relief of fatigue is also secured and attention paid to the general health, mental and physical, and to the improvement of the abdominal and pelvic muscles.

4. If recovery does not follow after six to twelve months operative measures will give better results than continued pessary treatment, and probably perineal repair and plastic vaginal operations will be more satisfactory than those of the hysteropexy type.

REPORTS of cases of epidemic jaundice have been received by the New York State Health Department from almost every part of the state, and the disease is epidemic in adjoining states.

DURING 1921 35 cases of leprosy were reported in New York, an increase of 7 as compared with the previous year; of these cases 12 were in municipal hospitals, while the others remained at home pursuing their usual occupations. All are periodically examined by an inspector of the Health Department, and treatment by chaulmoogra oil is regularly carried out.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

BY

SIR JAMES MACKENZIE, M.D., F.R.C.P., F.R.S.

(From the Institute for Clinical Research, St. Andrews.)

III.—HEART FAILURE.

WHEN anything is detected amiss with the heart the essential question for the practice of medicine is, "Does this sign indicate heart failure, or does its presence foreshadow its oncoming?" No examination, however elaborate, can be considered complete, no prognosis of any value can be given, and no rational treatment can be indicated unless these questions are satisfactorily answered. A knowledge of heart failure is therefore essential to the intelligent practice of medicine.

Definition of Heart Failure.

Heart failure may be defined as the condition in which the heart is unable to maintain an efficient circulation when called upon to meet the efforts necessary to the daily life of the individual. This definition is made wide and includes conditions of extreme failure as well as those where the failure is beginning. In the definition it was stated, "when called upon to meet the efforts necessary to the daily life of the individual," and this gives the clue to the symptoms of heart failure. It is a matter of common experience to find a person at rest presenting no physical sign of impairment when examined most carefully, yet on effort or certain kinds of effort symptoms are provoked which are due to the inability of the heart to meet the effort—that is to say, when at rest the heart is quite efficient, and its inefficiency is only found out when effort is made; and from this it is seen that the first signs of heart failure are shown by symptoms being called forth when the individual performs an effort which he was wont to do without any symptoms. The "response to effort" is therefore the sole guide in the detection of the early signs of heart failure.

CLASSIFICATION OF SYMPTOMS.

Most cardiac symptoms can be arranged in four groups, according to the structures which give rise to the symptoms, each group having also a particular significance.

1. *Symptoms due to lesions of the valves.*

The symptoms of this group may show the progressive effects of a disease where the valves are being damaged, as the appearance of a murmur during an acute illness, or the gradual alteration of the murmurs, as in the slow progress of mitral stenosis. The kind of information conveyed by murmurs is that the valve may be the site or focus of an infective disease, or that the damaged valve may present an obstacle to the work of the heart muscle.

2. *Symptoms due to alteration in rate and rhythm.*

The kind of information furnished from this source is of a disturbance of some part of the conducting or reflex system of the heart—that is, of the parts concerned in the regulation of the heart beat and in the production and conduction of the stimulus that causes the contraction of the different chambers of the heart.

3. *Symptoms due to alteration in the size and shape of the heart.*

The kind of information conveyed by these symptoms is that the heart is distended by an increase of its contents (dilatation), or that its walls have become thickened (hypertrophy).

4. *Symptoms due to an inefficient output of blood from the heart—that is, the symptoms due to heart failure.*

THE SIGNIFICANCE OF SYMPTOMS.

It is to be observed that the first three groups of symptoms —that is, the modified sounds, variations in rate and rhythm, and alteration in the size and shape of the heart—do not give evidence of the functional efficiency of the heart. Diseased valves, abnormal rhythms, and increase in the size of the heart are so often associated with heart failure that they have come to be looked upon as evidences of heart failure; but this is a mistake. It may be said that signs revealed by the physical examination of the heart or by instruments do not give this kind of information. It cannot be insisted too strongly that though information of a useful kind can be obtained from these signs, they do not give the kind of information that is essential for rational practice. This warning is needed, for the attention given to physical signs tends to foster the idea that such signs are capable of revealing the functional inefficiency of the heart. The spectacular nature of this kind of examination makes the more important inquiry into the patient's sensations seem ineffective.

The Two Forces of the Heart Muscle.

As heart failure is first shown by a limitation of the field of the heart's response to effort it is necessary to recognize some of the features of the heart's power to accomplish its work.

As the heart possesses the power, not only of maintaining an efficient circulation when the body is at rest, but of varying its activity according to the bodily requirements, the force inherent in the heart muscle may be considered, for practical purposes, to be composed of two parts—that is to say, a part which is employed to maintain an efficient circulation when the body is at rest, and which therefore may be called the "rest force," and a part which is called into action when effort is made, and which may be termed the "reserve force." The rest force is the minimal force which the heart can exert to maintain the circulation at a level consistent with life. The impairment of this rest force produces those evidences of heart failure which persist when the body is at rest, such as dropsy and dyspnoea, and the continuance of such impairment eventually leads to a fatal issue.

The second part of the heart's force is that which is called upon when the body makes some effort. While the body is at rest this potential force is not exercised, but its possession enables us to undertake with ease all forms of effort. Inasmuch as this part of the heart's force is only used when exertion is made, it may appropriately be called the "reserve force" of the heart. Although we recognize what the reserve force is, it is not very easy to define it in words. Physiologists do not seem to have given it that study which its importance demands. Although difficult to define, its existence is proved in every movement of the body, and in every effort which is made, as it is by the possession of this faculty that we are able with ease to undertake all forms of effort.

Symptoms Produced by Failure of the Output of the Heart.

When an organ fails the evidence of its failure cannot usually be perceived by the study of the organ itself, but by the effects of its impaired function upon other organs. Heart failure means an output of blood from the heart insufficient to meet the requirements of the body, and if we possessed the power we might detect evidence of this limited supply in the various organs. All organs or systems may receive an insufficient supply. There are, however, only a few that give rise to perceptible symptoms, especially in the earlier stages. The first sign of heart failure is evoked by the organ or system which gives rise to the most prominent symptoms, and usually that system is the respiratory. Hence the reason that respiratory distress in response to effort is often the earliest sign of heart failure.

Symptoms Produced by Exhaustion of the Heart Muscle.

When the heart muscle itself receives an insufficient supply of blood, as in blocking of the coronary artery, it may give rise to symptoms when it is called upon to make an effort by reacting on the nervous system, and thus we often get pain on effort as the earliest sign of this kind of heart failure. The same kind of symptom arises when the heart muscle is exhausted from overwork or when supplied by impure blood or blood defective in some essential quality.

The Nature of the Symptoms of Heart Failure.

When we come to look into the mechanism of these two symptoms, respiratory distress and pain, we find that they are both due to a supply of blood insufficient for the effective functioning of certain organs. This is the aspect of heart failure which should be kept in view in describing the various features of affections of the heart. We do not yet possess sufficient knowledge to understand all the processes concerned in heart failure, but the more they are studied the more evident does it become that the symptoms of heart failure are to be found in the impaired function of organs that receive an insufficient supply of blood.

Signs in Advanced Disease of the Heart.

It is necessary to keep this simple description of the essentials of heart failure in mind. Obvious symptoms, such as dropsy and enlarged liver, tend to divert attention from the subtler and more instructive signs. These obvious signs are late developments, and the mechanism of their production is fundamentally the same as breathlessness, in that they are due to the inability of the heart to maintain an efficient circulation in certain organs and tissues.

The Varied Symptoms of Heart Failure.

This presentation of the subject may seem so simple that it might be assumed that the recognition of heart failure is an easy matter. While the principle is simple its application is extremely difficult in the present state of knowledge. Seeing that the main symptoms of heart failure are of the nature of sensations of distress experienced by the patient on effort, we must know what questions to put to the patient, and we must be able to interpret his replies. The ability to do this can only be acquired after a long experience. Sensations of distress on effort may arise from many other conditions than a failing heart; those due to the heart must therefore be clearly distinguished from those due to other conditions. The sensations of distress are often brought out in response only to particular kinds of effort. Thus a mechanic with a damaged heart may be able to swing a forehammer all day, but is pulled up on going up a hill. On a warm day a man may walk ten miles, but he may be pulled up on walking a hundred yards on a cold day.

Identical heart symptoms may arise when the heart muscle is diseased or when it is temporarily weakened from some passing infection. It is necessary to differentiate between these conditions. The severity of the distress may bear no relation to the gravity of the condition. In one man a slight pain may be of ominous significance; in another, pain of an agonizing kind may not be a sign of danger.

The signs of heart failure being mainly sensations of distress, it is useless to seek for a knowledge of heart failure from laboratory experiments. No doubt experiments reveal certain features, but they cannot give us the information necessary for the intelligent practice of medicine. Nor can such information be obtained from those who specialize in heart affections. This will at once become evident when it is realized that the symptoms of cardiac inefficiency are to be found, not in the examination of the heart, but by the symptoms produced by organs which do not receive a sufficient blood supply. Moreover, the heart is so often disturbed or weakened by disease in other parts of the body that an examination limited to the heart would of a certainty mislead.

The organ which receives a diminished supply of blood will give rise to symptoms peculiar to its function. We thus get a diversity of symptoms depending on the organs which are most affected, or rather whose symptoms are most in evidence. Therefore, to understand the symptoms of heart failure it is necessary to understand the symptoms produced by other organs. This kind of knowledge will never be acquired until we have a better understanding of the principles concerned in the production of symptoms. I have repeatedly called attention to the fact that so long as symptoms are incoordinated the study of disease clinically will merely result in an addition to a mass of chaotic details. When it is recognized that though symptoms are infinite in variety and in number the vital processes concerned in their production are few in number, it will be seen that with the recognition of these vital processes the chaotic mass of symptoms will be capable of classification according to their affinity in nature. This has already been demonstrated in describing the reflex process concerned in the movements of the heart. In heart failure the process concerned is an insufficient supply of blood, and each organ which receives an insufficient supply will show symptoms peculiar to its impaired function.

SUMMARY.

1. Heart failure occurs when the heart muscle fails to supply the organs of the body with blood sufficient for the efficient performance of their functions.

2. The symptoms of heart failure are therefore to be found in the symptoms produced by the impaired function of those organs that do not receive sufficient blood.

3. In the first instance this will occur only when the heart is called upon to exercise its full powers; the early symptoms of heart failure will only be produced during some physical effort.

4. This limitation of the field of response to effort is revealed by sensations of distress.

5. When symptoms of heart failure persist when the patient is at rest (dropsy, enlarged liver, orthopnoea) the reserve force of the heart is exhausted and the rest force is being encroached upon.

6. The symptoms of heart failure are not to be found by the examination of the heart.

DRAINAGE IN ABDOMINAL EMERGENCIES.

BY

A. CHURCHILL, M.B., B.S.LOND.,

LATE SENIOR HOUSE-SURGEON, BOLTON INFIRMARY.

VALUABLE papers have appeared from time to time in the *British Medical Journal* and *Lancet* emphasizing the importance of early diagnosis in acute abdominal crises. The responsibility for the heavy death rate of these conditions is in this way laid at the door of the medical attendant who is first called in to see the case.

It is an undoubted fact that the mortality amongst these patients increases in direct ratio to the time which has elapsed between the onset of symptoms and admission to hospital. Too often we have cases sent to the surgical wards which are more fit for the *post-mortem* room than for the operating table. Yet although so much depends on diagnosis, it is no use being blind to the fact that treatment in most of these cases is by no means a matter of universal agreement. Almost every step in our way of dealing with the commonest of abdominal emergencies is still open to controversy: the proper time for intervention, the site of incision, the mode of drainage.

Some surgeons advocate immediate operation as soon as a case of acute appendicitis is diagnosed; others prefer to wait until the crisis is over and operate *à froid*. McBurney's gridiron incision, Battle's incision, a paramedian incision with retraction of the rectus outwards, has each in turn been recommended as the incision *par excellence*. Last, but not least, drainage in the presence of free fluid in the abdominal cavity is a subject on which few agree. Swabbing the fluid out, flushing the peritoneal cavity with lotions, the use of tubes, have all been advocated by eminent authorities. On the other hand, a school of surgeons teaches that the peritoneum is well able to look after itself, and that the less it is interfered with the better. No more swabbing, no more flushing, no tubes, or only one where two or three were deemed necessary.

The 75 cases which form the basis of this paper seem to me to be of interest as having been treated on the lines of strictly limited interference. All the patients came from the working-class practice of a large industrial town, and the majority were not sent to hospital until several days after the onset of symptoms. They are thus anything but "picked" cases. I have purposely omitted four cases of general peritonitis who arrived moribund and died within twenty-four hours of their admission to hospital.

Technique.

The following rules were observed with regard to drainage:

(*a*) Drainage was only carried out in the presence of free pus or thick purulent fluid.
(*b*) The fluid was not swabbed.
(*c*) The peritoneal cavity was not irrigated.
(*d*) Not more than one tube was ever used, this in the great majority of cases being placed in Douglas's pouch.

As soon as the patients had recovered from the effects of anaesthesia they were put in the full Fowler's position, the upper end of the bed being raised on blocks three feet high.

Among those treated are included cases of general peritonitis and of perforation of the stomach or duodenum. At the present day in many teaching schools the routine methods of drainage for such cases are three tubes in the renal, right iliac, and pelvic pouches.

Incision.

The incision varies with the condition present. In doubtful cases a right paramedian incision with retraction of the rectus outwards. In perforations of the stomach or duodenum a paramedian incision above the umbilicus with retraction of the right rectus outwards. In cases of general peritonitis a similar incision below the umbilicus. In the majority of cases of acute appendicitis, McBurney's gridiron incision; this was used in forty-eight out of seventy cases. Battle's incision was only used twice. In a few cases an oblique incision going right through the thickness of the abdominal parietes; this gives excellent access, but doubtless the risks of hernia formation are increased.

Where the position of the appendix is known before operation to be abnormal, as in Case 49, a suitable incision is used.

Only one case of hernia has been recorded as a sequence of the operation. The following table shows why operation was undertaken and the result:

	Total.	Recoveries.	Deaths.	Mortality.
				Per cent.
Acute appendicitis without peritonitis	22	22	0	0
Acute appendicitis with pelvic peritonitis	29	27	2	6.8
Acute appendicitis with general peritonitis	5	4	1	20
Acute appendicitis with localized abscess	14	14	0	0
Perforation of the stomach or duodenum	5	5	0	0
	75	72	3	4

When there was a localized abscess the appendix was not removed in four out of fourteen cases. When the bowel was friable and the appendix difficult to reach it was thought safer to leave it behind. No. 37 was a child of 6, who had general peritonitis and died two days after the operation. No. 45 was a woman of 47, who died of portal pyaemia thirty-four days after admission. No. 58, a boy of 5, had a localized abscess and a gangrenous appendix. He died of intestinal obstruction. All these patients were operated on immediately after their arrival at hospital. It is open to question whether in No. 58 life might not have been saved by waiting until the acute condition was over before operating.

Complications.

These were: pneumonia, 1; pelvic abscess, 1; faecal fistula, 1; subphrenic abscess, 1; hernia, 1. The faecal fistula occurred in the case of a girl of 8 in whom the small intestines were matted together in such a way that the appendix had literally to be dug out of a mass of adherent bowel. During the process a loop of intestine was opened into. A faecal fistula developed which was successfully closed a month after the original operation.

Advantages of Limited Drainage.

The following advantages are claimed for the method of limited drainage:

(*a*) Shock is diminished as time is saved, and the abdominal parietes are not interfered with to the same extent.

(*b*) The after-treatment is less painful. Nothing is more nerve-shattering for a patient than the daily dressing with moving of three large tubes.

(*c*) The formation of a faecal fistula is less frequent, most faecal fistulas being due to ulceration of the bowel by tubes.

(*d*) Adhesions are not likely to form, and intestinal obstruction as an early or later complication is thus avoided.

Two of the perforation cases mentioned in this list were subjected six weeks after the first operation to a second laparotomy for gastro-jejunostomy. In both cases the only adhesions found were over the site of perforation just beneath the liver, and they did not interfere at all with the mobility of the stomach. Would this have been the case if several tubes had been used?

Swabbing the fluid out of the general peritoneal cavity or irrigating it with saline or antiseptics are procedures more likely to do harm than good by disseminating septic material and injuring the already inflamed peritoneum.

The objection which might be raised against the method of limited drainage is the additional risks it involves. As an answer to this it will be seen that out of 75 cases only two patients had secondary abscess formation.

The first patient (No. 34) had acute appendicitis of ten hours' duration, and very few people would have hesitated in closing the abdomen; the infection may have been very virulent. The other case (No. 75) had a very high gangrenous appendix just beneath the liver; the peritoneal cavity was drained, but contrary to rule the tube was not put in Douglas's pouch but behind the caecum, in the right renal fossa. A subphrenic abscess developed later. I am inclined to think that this complication would have been avoided by merely draining the pelvis, as we did in all our other cases. A tube often acts as a focus of infection; it irritates the neighbouring peritoneum and renders it less capable of self-defence. If placed at a spot where the peritoneum is not already inflamed it is more likely to act as a drain and not as an irritating agent. That is the reason why in most of our cases we drain not the appendix site but Douglas's pouch.

Amongst our other cases several were closed which had free turbid fluid in the pelvis. The majority healed by first intention. A few—amongst whom was No. 70, a perforated duodenal ulcer of twelve hours' duration—had a discharge from their wounds a few days after operation. In other words, when there is an abdominal wound and fluid within the abdominal cavity, this fluid, if it does not become absorbed, finds its way out easily via the wound.

These considerations lead me to the belief that a more restricted drainage of the abdomen than has been practised in the past involves no additional risks, whilst it entails advantages which make it a definite improvement in the surgery of emergencies.

SPLENOMEGALY WITH PROGRESSIVE ASCITES AND LOUD VENOUS HUM:

SPONTANEOUS CURE OF ASCITES BY LEAKAGE THROUGH ABDOMINAL WALLS.*

BY

ARTHUR J. HALL, M.A., M.D.CANTAB., F.R.C.P.,

PROFESSOR OF MEDICINE, UNIVERSITY OF SHEFFIELD; SENIOR PHYSICIAN, ROYAL HOSPITAL, SHEFFIELD.

THE following case, in addition to having features of diagnostic interest, eventuated in such an unexpected way that it seems worthy of record.

History.

A single man, aged 25, was admitted to the Sheffield Royal Hospital on June 21st, 1916, suffering from haematemesis. He is a coal-miner by trade. Up to the onset of his illness he had always been actively athletic, playing football regularly. He is a life-long abstainer and non-smoker. He has not suffered from any previous illness except occasional attacks of "influenza."

On the day of onset, in April, 1916, he had worked for three consecutive "shifts" in the pit—that is, practically twenty-four hours without a break. During the third shift he felt pain in his stomach. For the next few days he was out of sorts, and then suddenly vomited about three pints of blood.

He was kept in bed for six weeks, feeling ill and weak. After this he began to improve, and was getting about, until the night of June 19th, when he felt sickly and restless. Next day he had another severe haematemesis in the evening, and again, on the morning of admission, a still larger one.

On admission (June 21st) he complied with all the characteristics of an early chronic splenic anaemia:

1. Spleen enlarged to below navel.
2. Absence of enlarged lymph glands.
3. Anaemia of chlorotic type: red cells 1,350,000.
4. Leucopenia (5,000).
5. Liability to copious gastro-intestinal haemorrhages from time to time.

At that time there seemed no reason to doubt the diagnosis of splenic anaemia. The question of splenectomy was considered, and my surgical colleague and I agreed to wait until the profound anaemia following haematemesis had passed off before advising operation. During the next few weeks he improved. There was no recurrence of bleeding.

About the middle of July, 1916, the abdomen was found to be somewhat fuller, and to contain free fluid. The quantity was not large and it produced no symptoms. It appeared to be the type of ascites not infrequently found in cases of splenic anaemia, without necessarily connoting cirrhosis of the liver.

A very loud venous hum was now detected for the first time over the lower half of the sternum. The area over which the sound was heard extended from the level of the third costal cartilage above to the tip of the ensiform cartilage below, and for a short distance on either side of the sternum. The sound at the upper level was a typical "bruit de diable," such as is heard in the neck of chlorotics. It became gradually louder as the lower end of the sternum was approached, and, suddenly, on reaching the ensiform cartilage, its intensity became extremely increased, so that it might be described as a continuous "roar." At this latter area a thrill could be felt on light palpation, disappearing on firm pressure. The sound was slightly increased during inspiration, but was continuous throughout the respiratory cycle. There were no visible enlarged cutaneous veins.

During this time the anaemia showed little improvement in spite of treatment, and he had one or two attacks of epistaxis. Towards October, 1916, the ascites began to increase very much, so as to necessitate tapping on October 20th. After this it refilled rapidly and the tapping had to be repeated nine times during the next three months, varying

* An account of this case was given at the meeting of the Association of Physicians held at Birmingham in May, 1921.

quantities, up to 13 pints, being removed each time. About Christmas the lower abdominal wall became sore, and on further attempts to tap him it was impossible to get any quantity of fluid away. Abdominal section was considered, but owing to the condition of his abdominal wall it was thought to be very undesirable.

After this the man's condition was deplorable. The abdomen was greatly distended, there was secondary oedema of the legs, and it was necessary to keep him almost continuously under morphine on account of the constant pain from distension. It seemed certain that he would die.

As regards diagnosis, the progressive ascites with rapid loss of flesh following his early symptoms of splenic anaemia made cirrhosis of the liver seem probable—in fact, a typical picture of Banti's disease, except for the rapidity of progress, which was measured in months instead of years. This view was supported by the presence of the loud venous hum over the sternum, such as is occasionally found in cases of hepatic cirrhosis.

About the end of January, 1917, a remarkable change gradually came over the scene. The abdominal walls had become greatly distended, and there were large numbers of "lineae atrophicae." Through these stretched areas of the lower abdominal wall the ascitic fluid began to ooze at various points. The oozing continued night and day for the next few weeks. Dressings were applied constantly to soak up the fluid, and during the next week or two the abdomen began to diminish in size. The pain became less, so that morphine was no longer required. His appetite returned and he put on flesh. Week by week he improved steadily, and in April, 1917, one year after the first onset of symptoms, and about three months after the oozing had begun, it ceased completely and he was able to get about. Since then he has made an uninterrupted recovery.

I examined him in May, 1921, four years after he had left hospital. He was then in good health, well nourished, and able to do his work and enjoy life, though somewhat less strenuously than before his illness. The spleen is just as large as it was when I first saw him in June, 1916. He does not look pale. There is no increased fragility of the red cells. There is no ascites. There has been no further haematemesis. The venous hum is now limited to an area about the size of a halfpenny, situated over the middle line opposite the sixth costal cartilage. It is much less loud than before. There is a very faint thrill on light palpation.

REMARKS.

The venous hum was first heard in July, 1916, soon after the second attack of haematemesis, at the same time that a certain amount of fluid was first detected in the abdomen. How long the murmur had been present is uncertain. When first heard it was so loud and obvious that it could hardly have been missed had it been present when he was examined on admission about a month earlier.

Thayer[1] has given a detailed account of recorded cases of venous hums heard over and about the abdomen. These vary widely in position and degree according to circumstances. They may or may not be associated with visibly enlarged cutaneous veins. In four cases the sounds described correspond so closely to that in my case that their similarity of origin seems probable.

Rolleston[2] quotes a case under Ogle at St. George's Hospital of a man, aged 58, who died of cirrhosis of the liver. A loud murmur had been heard during life behind the sternum, and at autopsy the left internal mammary vein showed a varicose condition in this region. It then turned inwards to the falciform ligament and ran into the left lobe of the liver, joining the left branch of the portal vein.

He also records a case of his own, a man aged 43, who died of cirrhosis of the liver. There was a continuous bruit in the epigastrium, resembling the "bruit de diable" heard in the neck. The falciform ligament contained a thin-walled vein as large as the little finger. He says: "When the hum is loudest over the lower end of the sternum above the lower margin of the liver it is probably produced in a dilated coronary vein, or in a dilated communication between the internal mammary vein and branches joining the portal vein."

In all these cases the presence of cirrhosis of the liver was either proved at autopsy or was strongly suspected during life. So far as I can ascertain, no case having a similar loud venous bruit audible in this particular situation—namely, over the xiphisternum—has been recorded in any other pathological condition than cirrhosis.

Spontaneous Restoration of Portal Equilibrium.—I have not been able to find a record of any case of ascites which has similarly cured itself by multiple leakings through the abdominal wall. Jenner[3] published a case in which, after several tappings, the abdominal wall close to the navel burst with a loud report, but whether the result was satisfactory or not I do not know.

DIAGNOSIS.

As the patient is still alive the actual pathological conditions must, for the present, remain a matter of speculation. It is possible to exclude certain alternatives. Thus there is no question of alcohol, as the man is a life-long abstainer. Syphilis may also be excluded, as the blood gives a definitely negative reaction. Gaucher's disease is rare, and in the absence of any family history, known occurrence in childhood, or typical stigmata of the disease, such a diagnosis is not supported by the facts of the case. Familial splenomegaly is negatived by the absence of family history, of jaundice, and of increased fragility of the red cells. The absence of jaundice also excludes biliary cirrhosis.

The diagnosis, therefore, seems to rest between:

1. A primary portal cirrhosis—not due to alcohol.
2. Thrombosis of the portal vein.
3. Splenic anaemia (with or without cirrhosis of the liver).

As regards (1) primary portal cirrhosis (not alcoholic), we may set the rarity of such a condition in adults, the absence of any early dyspeptic symptoms, the very large hard spleen preceding any recognizable ascites, and the complete cessation of progress when portal equilibrium was re-established.

There are several points in this case which seem to fit in with the diagnosis of (2) portal thrombosis. In the first place there is the sudden onset of symptoms. His first abdominal pain came on whilst he had been at hard manual labour at the "coal-face" for nearly twenty-four hours. We may assume, therefore, that he was not anaemic to any extent previous to that time. This alone is not pathognomonic, because it is familiar knowledge that in typical splenic anemias patients usually do not present themselves for treatment until the spleen is already very large, and must therefore have been enlarging for some time without producing symptoms sufficient to require treatment. If, however, this abdominal pain marks the onset of portal thrombosis, the occurrence of severe haematemesis a few days later would also be explicable on the same grounds.

I am informed by his medical attendant, Dr. West Jones of Eckington, that the spleen was enlarged to a considerable extent whilst he was attending him before admission, but there is no exact record as to when it was first noticed. The onset of progressive ascites in the late summer would suggest further extension of thrombosis to other branches of the portal vein. The course and progress of the case are also consistent with this diagnosis. His profound anaemia when first seen in June, 1916, could be sufficiently accounted for as "post-haemorrhagic."

If the diagnosis of portal thrombosis is correct it would seem that now his obstruction is relieved he is in much the same condition as a man who has recovered from a femoral thrombosis, whose only inconvenience is the mechanical damage which the obstruction has caused to the affected leg. In his case the mechanical damage is an enlarged spleen and probably a good many abdominal adhesions.

There is considerable evidence, both clinical and pathological, that cases of portal thrombosis simulate splenic anaemia very closely. Parkes Weber[4] recorded such a case in a woman. The onset dated from a confinement in August, 1910. She had ascites, enlarged spleen, and severe haematemesis five years later, from which she never recovered. At autopsy thrombosis of the portal tract was found. There was no cirrhosis of the liver. Galloway[5] also recorded a case in a man, aged 28, with splenomegaly, leucopenia, recurrent haematemesis, and ascites. Splenectomy in his case was followed by death in ten days. At autopsy there was no cirrhosis of the liver, but definite portal thrombosis.

Similar cases have been known and recorded previously. Langdon Brown,[6] in his review of pylethrombosis and suppurative pylephlebitis, mentions a case which was admitted into St. Bartholomew's in 1872 and had been diagnosed as portal thrombosis twenty years before admission. The patient was a woman, aged 48. She had pain in the left side twenty-six years previously, following the birth of her second child. Haematemesis occurred at intervals; the spleen reached to the navel. At autopsy the portal vein was found to be a mere cord with fine lumen. The liver was normal. It is interesting to note that in the report of this case no mention is made of ascites having been present, in spite of the extent of the thrombosis.

As has been pointed out by others, there is no certainty, even if portal thrombosis is the only lesion found at autopsy, that it has caused the condition or even preceded the onset of splenomegaly. Even if it has done both we are still left in doubt as to what has been the cause of the thrombosis.

On the whole I am inclined to look upon this as a case of "portal thrombosis." Possibly the further course of the case may show more definitely the underlying pathological condition. Meanwhile the question arises, Should splenectomy be advised now? Considering the very large size of the spleen, the probable existence of considerable adhesions in the abdomen, and the fact that he is practically free from symptoms, I think the answer should be in the negative.

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THE RECORD OF A BRIEF EXPERIENCE WITH THE SACHS-GEORGI TEST.

BY

P. PARTHASARATHY, L.R.C.P., L.R.C.S.EDIN., D.P.H.CAMB., D.T.M.LOND.;

AND

MARY M. BARRATT, M.B., CH.B.GLASG.

With an Historical Account of the Development of Flocculation Tests for Syphilis,

BY

J. C. G. LEDINGHAM, C.M.G., M.B., CH.B., F.R.S.

(From the Lister Institute, London.)

OUR only excuse for placing the following notes on record is the fact that hitherto comparatively few collated results of parallel Wassermann and Sachs-Georgi tests have appeared from laboratories in this country. It will doubtless be the policy of the near future to institute carefully planned investigations on the great scale dealing with parallel complement-fixation and flocculation tests with a view to the selection of the best working methods and the correlation with clinical experience of what may prove to be the future routine serological test for syphilis. Pending the appearance of such massed statistics it may be of interest to record the capabilities of a flocculation test performed with material sent from outside sources to the diagnosis department of this institute accompanied by clinical data of varying completeness. Our series comprises only 265 serums forwarded to the institute during the period July to October, 1921. One of us (B.) carried out the routine Wassermann tests, while the other (P.) undertook, solely as a matter of research, the parallel flocculation tests.

METHODS EMPLOYED.

Flocculation Tests.

Two antigens were employed throughout ("D" and "L"), and the results with both are summarized. Antigen "D" was that of Bordet and Ruelens (1919), with the addition of cholesterin as recommended by Dreyer and Ward (1921), and the latter's technique was strictly adhered to so far as qualitative diagnosis was concerned, no attempt being made in this short series to probe the possibilities of quantitative evaluation. A dropping apparatus was used, and for the first 122 serums five tubes containing dilutions of serum varying from 1 in 1.25 to 1 in 26.4 in a total volume of 25 drops were put up. Later, as the results from the first tube were indefinite, and as a large quantity of serum was required, the first tube was dispensed with. The mixture of antigen, saline, and serum was incubated at 37° C. for seven hours in a water-bath, and the results then read. One batch of antigen was employed throughout, and was preserved in a cool incubator at a temperature of about 22° C. Antigen "L" was simply an alcoholic extract of guinea-pig's heart muscle, to which was added a 1 per cent. solution of cholesterin in the proportion of 9 parts of heart extract to 1 of the cholesterin solution.

For the first 132 cases four tubes were put up, containing in a total volume of 26 drops a constant quantity of pure serum (6 drops) and 20 drops of a dilution of antigen varying from 1 in 20 to 1 in 80. For the remaining half of the series the antigen was kept constant in the four tubes (20 drops of a 1 in 40 suspension) and the serum was varied from 1 drop to 6, the total volume being made up to 26 drops.

The dilutions of serum in the tubes were therefore 1 in 3, 1 in 6.5, 1 in 13, and 1 in 26. The serums had been previously heated at 54° C. for 90 minutes. The tubes were incubated for five hours in a water-bath at 37° C. and the results were read 20 minutes after removal from the bath. They were reread after standing at room temperature for twelve to fourteen hours.

One batch of this antigen "L" was used throughout and experience showed that preservation in the cold (about 4° C.) was most satisfactory. Results with both antigens were recorded as "standard" (easily visible to the naked eye), "trace" (visible with lens), and "negative." At each test controls were used—namely, one Wassermann-positive serum, one Wassermann-negative serum, also previously tested positive and negative Sachs-Georgi samples. The antigen was also put up alone to exclude any non-specific precipitation.

Wassermann Tests.

These were performed with the antigen employed here—namely, an alcoholic extract of guinea-pig's heart muscle, to which is added before the test a 1 per cent. cholesterin solution in the proportion of 5 parts of extract to 4 parts of the cholesterin solution. Of this antigen a 1 in 90 dilution was used.

RESULTS.

Total number of serums tested	265
Of these, Wassermann positive	91
Positive flocculation ("L")	86
Positive flocculation ("D")	74

The degree of agreement may be otherwise expressed for the two antigens used, thus:

W+ L+	83	W+ D+	71
W− L−	171	W− D−	171
W+ L−	8	W+ D−	20
W− L+	3	W− D+	5
Total	265	Total	265

Thus, comparing the Wassermann and the flocculation tests by "L" antigen the total number of discrepancies in the series was 11, or 4.1 per cent., and in the case of "D" 23, or 8.6 per cent. The 91 positive Wassermann tests are classified as 70 "full positive," 10 "partials," and 11 "slight partials." Corresponding to this grouping the results with "L" and "D" are as follows:

	Total Positive.	Full Positive.	Partial Positive.	Slight Partial.
W	91	70	10	11
"L"	83	67	9	7
"D"	71	61	5	5

Thus 5 of the 8 missed positives with "L" antigen correspond to partial and slight positive Wassermann reactions, and half of those missed by "D" antigen are similarly accounted for. Only three serums yielded positive results with both "L" and "D" antigens, while the corresponding Wassermann tests were negative. In all three the flocculation tests were recorded as "trace" reactions. One was from a latent case under treatment and in which the Wassermann test had been positive seven months previously; another was untreated and was stated to have a rash on trunk and perforation of palate (certainly a suggestive history); while the third came with no particulars.

Treated and Untreated Cases.

One hundred and fifteen of the series were stated to be treated cases, while 150 were entered as untreated or "no particulars." They are thus grouped:

	Total.	W+.	"L"+.	"D"+.
Treated	115	31	28	23
Untreated	150	60	55	48
Total	265	91	83	71

Primary Cases.—There were 20 cases of primary sore, in 9 of which spirochaetes were found. They yielded 9 positive results by all three methods.

Only 5 cases of nerve syphilis appear in the list, with a yield of one positive result with the Wassermann test, the corresponding flocculation tests proving negative.

Discussion.

It has been customary to take the discrepancy percentage as a measure of the efficiency of a flocculation test, and on this basis the results from our small series compare favourably with those recorded by other workers in this country who have published results within the last eighteen months. The discrepancy percentage, however, must in the meantime be regarded solely as a provisional measure of efficiency. The ultimate interpretation of discrepancies between complement-fixation and flocculation tests must, as Lesser (1919) has wisely pointed out in a paper dealing with results by three different methods (Wassermann, Meinecke, and Sachs-Georgi), rest with the clinician, whose record of the past, present, and future clinical course of the case and response to treatment will materially assist the serologist to appraise with some confidence the results from different methods and to eliminate those which prove unsatisfactory. The flocculation test may indeed prove, as Dreyer and Ward suggest, to fit the clinical facts even better than the Wassermann. Even now, with some sixteen years' experience of the Wassermann test, doubtful reactions are constantly occurring (especially in treated cases), and the correlation of these with parallel flocculation tests may serve to place the latter on a proper footing with respect to the clinical condition in the diagnosis of which it is designed to participate. So far, the agreement

between Wassermann and flocculation tests carried out under the best auspices is remarkably good, and there is every reason to expect that further extensive experience of parallel tests in relation to syphilitic disease will lay a sure foundation for the flocculation test as the future test of election for syphilis.

THE DEVELOPMENT OF FLOCCULATION METHODS.

It is, we think, of prime importance that the profession should be familiar with the historical development of a test which, now that the time seems favourable, may have a chance of establishing itself as the method of choice.

The Wassermann reaction dates from 1906, when the paper by Wassermann, Neisser, and Bruck appeared. This test, which at first was regarded as a true antigen-antibody reaction, was made possible by the demonstration in 1901 by Bordet and Gengou that, in the reaction between antigen and antibody, complement, if present, was fixed and consequently rendered unavailable for completion of haemolysis in a haemolytic system. In the following year (1907) it was shown by Landsteiner, Müller and Pötzl, Levaditi and Yamanouchi, and Porges that the effective substance which reacted with syphilitic serum was not present solely in organ extracts of luetic cases, but also in extracts of normal organs. Further, this effective substance was shown by them to be contained almost solely in the alcohol-soluble fraction, its association therefore with a lipoidal substrate being thus demonstrated. In this same year Michaelis noted in one single instance the formation of a visible precipitate when the extract of a luetic liver was brought in contact with a luetic serum. He concluded wrongly that this observation supported Wassermann's view of the specific character of the Wassermann test as a true antigen-antibody reaction. However, chance observation as it was, it gave the impetus to those attempts which have followed each other down to the present time to substitute for the complicated system of the Wassermann reaction a straightforward flocculation test involving two ingredients only. Following this isolated observation of Michaelis, Porges and Meier (1907, 1908) were the first to probe the possibilities of practical application, and, curiously enough, they chose to work, not with alcoholic organ extracts, but with commercial lecithin preparations (from egg yolk), the capacity of which to act as antigen in the Wassermann reaction had already been demonstrated. For many reasons, however, and more especially the instability of the lecithin suspensions and the occurrence of flocculation with normal serums, the use of lecithin was discontinued, and in later work by Porges, in collaboration with Elias, Neubauer, and Salomon (1908), resort was had to the use of sodium glycocholate, a salt possessing colloidal properties in solution, and which Levaditi and Yamanouchi had previously found to function as an antigen in the Wassermann test. Porges states that with this salt as antigen results were achieved which approximated in accuracy to those yielded by the Wassermann test; but it would appear that no thorough testing of flocculation methods was possible or practicable at this period, the Wassermann test in all its many modifications and improvements claiming the undivided attention of serologists and clinicians alike.

In the meantime the properties and mechanism of action of lipoids in serological reactions were being minutely investigated by numerous workers. Among them Sachs and Rondoni (1909), in the course of a study of the antigenic powers of lecithin in the Wassermann reaction, demonstrated an increased action of lecithin in the presence of sodium oleate, and in the following year (1910) Browning, Cruickshank, and McKenzie demonstrated the remarkable action of cholesterin in increasing the amount of complement absorbed in the presence of a mixture of lecithin and luetic serum. Taking advantage of this discovery, Herman and Perutz (1911) mixed cholesterin with sodium glycocholate with the object of obtaining a more visible flocculum in the presence of syphilitic serum. This modification proved in Herman and Perutz's hands more sensitive than the original technique of Elias, Neubauer, Porges, and Salomon with the glycocholate alone, and yielded positive results in certain luetic cases when the original method gave no visible flocculation whatever. Meanwhile the flocculation of these lecithin suspensions again drew attention to the study of the inner mechanism of the Wassermann reaction. Was the complement really fixed by virtue of a precipitin reaction? No visible precipitation, apart from chance observation, was noted, which might account for the fixation of complement in the presence of alcoholic organ extract and luetic serum. Jacobsthal (1910), however, succeeded in demonstrating by the ultra-microscope the occurrence of floccular masses, the development and growth of which could be followed. He even attempted to employ the method practically, and stated that absolutely negative results occurred with non-luetic serums, but the percentage of positive results was not quite so high as in the Wassermann-positive series.

This work was followed up by Bruck and Hidaka (1910), who found that, by the aid of the centrifuge, precipitates, small indeed in bulk, could be obtained after some prolonged contact of alcoholic liver extract from foetal lues with luetic serum at a low temperature. With the object of making this precipitate more bulky, and consequently more visible, they added mastix to the system, and with this technique it was possible to obtain results approximating to the Wassermann, but a fair percentage of discrepancies occurred. The outcome of this form of study was to support strongly the view that the Wassermann reaction depends primarily on fixation of complement by an invisible precipitate (nascent precipitate) taking place in the earliest stage of the interaction between the alcoholic organ extract and the luetic serum. Apparently the only difficulty now was to secure an extract sufficiently sensitive to show visible precipitation in the presence of luetic serum. Hecht (1916) had definitely successful results, but the most recent and definitive stage in the development of flocculation methods as practical diagnostic aids was reached towards the end of the war, when Meinecke (1917) and Sachs and Georgi (1918) came forward with tested procedures, the latter of which (by Sachs and Georgi) is likely, either in its original or more possibly in some modified form, to become the method of election.

Meinecke's method is known as the two-stage method, and in its ordinarily practised form (the so-called salt method) is carried out on the following lines, purely technical details being omitted:*

An ordinary Wassermann extract in distilled water dilution, and containing no cholesterin, acts as antigen. Mixtures of inactivated serum and antigen in this salt-free medium are kept at incubator temperature for twenty-four hours. At the close of this period all tubes should show flocculation, whether they contain normal or luetic serum. The second stage now commences. A definite amount of a sodium chloride solution of previously determined strength is run into each tube. After an hour's further sojourn in the incubator the tubes are read, when it is found that in the Wassermann-negative series the flocculi are dissolved up, while the Wassermann-positive series remain permanently flocculated.

The salt concentration determined from previous experiment is that which will in one hour just completely dissolve the flocculi in the normal controls, so that differences can be elicited as between strongly positive, weakly positive, doubtful, and negative series.

The Meinecke reaction appears to be a perfectly straightforward and feasible test. It has been tried by many workers in Germany, generally in conjunction with the Wassermann and with the Sachs-Georgi reaction presently to be described. On the whole, however, it has found much less favour than the latter.

With their experience of complement-fixation technique, and their intimate knowledge of the comparative values of simple alcoholic organ extracts and purified lipoids as antigens, Sachs, and Georgi (1918) chose as antigen an alcoholic extract of bullock's heart (hearts of other animals are, however, admittedly suitable), to which cholesterin as an absolutely indispensable adjunct is added. For the Wassermann test it is of course not indispensable, though sufficiently advantageous to make its use almost universal, but for the flocculation test its presence is essential for visible precipitation. The cholesterinized alcoholic extract is diluted with five parts of physiological saline. One c.cm. of a 1 in 10 dilution of the inactivated patient's serum is mixed with 0.5 c.cm. of the diluted extract along with the necessary controls. The tubes are left either for two hours at 37° C., and then overnight at room temperature, or they are kept continuously at 37° C. for eighteen to twenty hours. Positive reactions are read as +++, ++, and +, while the control serums remain clear or slightly opalescent. Both Meinecke's and Sachs and Georgi's reactions have been extensively tested in large series, and a summary of results in over 12,000 cases by various workers who compared the Sachs-Georgi with the Wassermann reaction in parallel series yielded a conformity

* In flocculation procedures technical details are all-important, but those interested must refer to the original papers cited below.

percentage with the Wassermann of no less than 92.44 per cent. (Sachs and Georgi, 1920).

The most recent advance is that of Dreyer and Ward (1921), who follow in principle the method of Sachs and Georgi, but prefer as antigen, on the ground of greater stability, one recommended by Bordet and Ruelens (1919) for Wassermann tests. To this antigen, which, according to Bordet and Ruelens, can itself be flocculated in the presence of luetic serum, Dreyer and Ward add cholesterin. They claim that with a stable antigen and a refined technique involving the quantitative expression of all degrees of flocculation, the test so conducted can lend itself to accurate standardization in terms of standard units.

Time and experience on the large scale will show how far this claim is justified and compatible with practicability in the hands of average workers, whose power to translate visual impressions into arithmetical language is notoriously variable. In treated cases particularly, the superiority of quantitative readings in flocculation tests over the purely qualitative evidence of the Wassermann would be warmly acknowledged, and it is to be hoped that the extensive parallel series which we understand are in contemplation may furnish important information on this point.

The above sketch is concerned solely with methods based on the mutual interaction of organic colloids and takes no account of the various and, on the whole, unsatisfactory tests which involve merely the precipitation of serum globulins by electrolytes.

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RESIDUAL VACCINES IN ACUTE BACTERIAL DISEASES.

BY

C. E. JENKINS, M.R.C.S., L.R.C.P.,

PATHOLOGIST TO SALFORD ROYAL HOSPITAL.

WHEN a dose of any vaccine is administered the extent of the resulting general reaction is beyond control. In chronic disease and where prophylaxis is intended it is possible to adjust the dose so that the reaction, if any, is small and therefore negligible. But cases which are acutely ill may, and usually do, react violently to a dose which would cause only trivial malaise in the other types of cases. The reason for the lack of control lies in our inability to gauge the effect before administration.

Another objection less frequently heard is to the effect that the patient is already "full of toxins," and any addition is not likely to improve his state. The argument is so plausible that its hypothesis is overlooked and suffered to pass unquestioned. The patient is not "full of toxins" until he is moribund; and since that is a clinical estimation, the lethal amount of toxin may have been reached before or after the patient is estimated to be in that condition. The objection also appears to presume that the human organism is a kind of pot into which a fixed amount of toxin may be poured. In any case the criticism misses the mark as far as residual vaccines are concerned, for they contain neither toxin nor endotoxin. It is evident that lack of control is the real bugbear, and I believe that the system about to be described is one which goes some way towards meeting the difficulty.

The treatment of acute sepsis does not permit delay, consequently it is not justifiable to wait for the preparation of an autogenous vaccine. A stock vaccine may be below an autogenous in efficiency, but the prospect of success in a given case would be placed in far greater jeopardy by two or three days' delay before commencing treatment.

To be generally useful a stock vaccine must contain the organisms that are most likely to cause such conditions as septicaemia, pyaemia, peritonitis, cellulitis, and large carbuncles associated with grave toxic disturbance. Two vaccines were therefore prepared: the first contained equal numbers of the streptococcus, pneumococcus, staphylococcus, and diphtheroid bacillus; the second contained the colon bacillus instead of the pneumococcus—in other respects it was the same as the first vaccine. A certain degree of discretion is needed to decide which of the two is the more suitable in a given case, but as a simple guide it may be said that the first is intended for all purposes except septic conditions of the abdomen and pelvis, in which the second will be found more generally useful.

A stock vaccine was frequently required in the out-patient department, and the opportunity was taken to note the largest dose that most walking chronic cases could tolerate without a general reaction. A minority showed a reaction with this dose, but they were ignored because it is impossible to assess individual idiosyncrasy on a graduated scale.

The vaccine was next tried with acute cases, starting with very small doses, and increasing them as experience demonstrated their lack of effect. A dose was ultimately reached which was capable of producing marked clinical improvement without causing any discernible clinical reaction. This was true of the great majority; a small minority reacted with undesirable intensity, and the problem they presented still awaited solution. The dose was one-third that of the corresponding dose in the chronic cases, and was approximately 80 millions of the mixed organisms. It will be observed that the vaccines were standardized upon a physiological basis. This method is, in the author's opinion, more exact than the counting methods, which are notoriously only accurate, as far as can be discovered, to within about 40 per cent. This dose, suitable for acute cases, was termed the standard dose.

The solution of the difficulty presented by the minority was found in a close study of the clinical manifestations of the effects of the vaccines. The following facts emerged:

(*a*) A general reaction in an acute case will be seen, if at all, in six to ten hours after injection.

(*b*) An improvement will make itself evident in nine to eighteen hours.

(*c*) It will be admitted that, if two doses of a vaccine are given within a few minutes of each other, the effect will be as if one dose equal to the sum of the previous two had been given. It was found that this rule invariably held good for all periods up to twenty-four hours, and was commonly true up to forty-eight hours.

These three items taken together offer a simple method of dealing with the matter.

Since the lengths of time in (*a*) and (*b*) are appreciably shorter than in (*c*) it is possible to give a fraction of the standard dose, then observe its effect, and if neither reaction or improvement occurs the second fraction can be administered next day. Any reaction following this second fraction is either very mild or, more frequently, so small as not to be recognizable clinically. After the first dose has been completed, in one or two portions, no further vaccine should be given for at least four days; it is better to wait five or six.

The system is very simple in operation and gives such reliable results that there is some danger of it generating a belief that the clinician is working with a remedy of very feeble potency, and that he can do as he pleases upon occasion. When a first fraction produces no result of any sort and the second a marked improvement without visible reaction there is a temptation to "continue" the benefit by giving a third fraction on the third day. If this is done the resulting general reaction may be very disconcerting, and although permanent harm has not ensued, for a few hours the aspect of the patient has been such as to deter me from any further excursions in the same direction.

It is not every case that needs a second dose, or a second fraction of the first dose. The first dose is frequently sufficient to be a turning point in the course of the disease, enabling the patient to recover without further stimulation.

The rapidity with which improvement can show itself throws an interesting light upon the question of a "negative phase" in connexion with this type of vaccine. The patient's tolerance to a second dose is not established for some four or five days after the first dose, and during that time he is

abnormally sensitive to the vaccine, yet the clinical change for the better appears in a much shorter time, and we may therefore only conclude that the patient's general resistance does not coincide with his resistance at the focus of infection. This is demonstrated in a remarkable manner in cases of large carbuncles accompanied by grave toxic symptoms. The disappearance of the slate-blue colour round the lesion and its replacement by a bright red erythema is a striking change that occurs in a few hours. A possible explanation is that the first antibodies produced by the vaccine are all removed from the circulation as quickly as they are formed by some process of concentration at the site of infection. Whether the inflamed tissues in that area play an active or a passive part in this fixation of the antibodies is a matter of speculation at present.

The following cases are the first few treated with the vaccine, and nearly every one illustrates some point discussed above. The cases have not been "selected," but are a true consecutive series.

Case 1.—Aged 26. Septic finger due to running dirty scissors into it. Next day, small pustule, lymphangitis, and axillary adenitis. The finger was fomented and the lymphangitis disappeared, but swelling of the whole digit commenced. Serum only on incision. General lassitude. Vaccine given on seventh day. Next day the swelling was rapidly subsiding; there was distinct tenderness at the point of original injury. Pus visible that evening; on incision, a large quantity escaped and there was complete relief from pain. Next day, a clean granulating surface, which was completely healed on the fourth day after administration of vaccine.

Case 2.—Aged 11. Streptococcal peritonitis, apparently idiopathic. Abdomen opened, drain inserted: prognosis hopeless. Vaccine given twenty-four hours later, up to which time the patient was maniacal and apparently dying. Heroin failed to calm the patient. Six hours after vaccine was given the patient went quietly to sleep, temperature and pulse fell, the former several degrees, and the case made an uneventful recovery.

Case 3.—Pyaemia; purulent arthritis of right elbow with abscesses in axilla and groin. Temperature 100° to 102.2°, pulse 100 to 120. Vaccine given. The next day the temperature was still swinging, but on the down grade. A second dose was given four days later, and temperature and pulse settled finally on the tenth day.

Case 4.—Aged 11. Acute osteomyelitis of spine and infection of canal. Prognosis hopeless. Vaccine given on the sixth day at 11 a.m. That evening the temperature rose half a degree, but the next morning was down one degree; the pulse fell from 140 to 110. The patient was operated on that afternoon, and died early next morning.

Case 5.—Carbuncle of hand, involving half of palm, index finger, and back of hand; acute toxic symptoms and swelling of arm; tissues blue-grey in appearance. Prognosis very serious. Vaccine given; no reaction, but tissues had lost blue colour within twelve hours; the carbuncle was surrounded by deep scarlet erythema, hot to the touch; toxic symptoms much less. Not content with this a second dose was given next day, and caused an alarming reaction for a few hours; then all passed off. A large slough separated on the eighth day, and a clean granulating surface was left which healed rapidly.

Case 6.—Infant aged 8 months. Furunculosis and toxaemic absorption; sleeping badly. Vaccine given and child taken home. Next day there was great improvement; the child slept well from then onwards. The mother volunteered the statement that the lesions had changed colour from blue to red. No sign of a general reaction. No further treatment needed.

Case 7.—Acute appendicitis, large burst abscess, and peritonitis in a female aged 40. She appeared to be doing well for three days after operation, then became worse—abdomen distended, anxious facial expression, wound drain diminished, temperature and pulse rising. Vaccine given, with prompt improvement within sixteen hours; there was profuse outpouring of pus. The patient looked much better, and distension disappeared. A second dose was given forty-eight hours later. Prompt reaction caused the patient to feel very unwell, and for a few hours the medical attendant had grave doubts as to her recovery. Next day she seemed better than ever, and eventually made a complete recovery.

Case 8.—Phagedaenic primary sore of penis; widespread septic infection of groins; advanced pyorrhoea. The patient was in a filthy personal condition. Streptococcus isolated by blood culture. Vaccine given on two occasions without clinical benefit; no reaction at any time. Ulcerative endocarditis found at necropsy.

Case 9.—Acute osteomyelitis in a patient aged 10. Bone opened up and drained, but temperature remained for seven days after operation at about 103°, with no sign of subsiding. Vaccine given, and temperature fell to 98° six hours later, and was 97° in another eight hours.

Case 10.—Pyaemia. Patient was ill three weeks before vaccine was given. No reaction or benefit after both fractions of the first dose, so a week's interval was allowed to elapse before giving a second dose. Again no reaction or improvement, so another week's interval was ordered. The third dose was then given, with the same result. All three doses were the same size.

Case 11.—Primary sore of penis with severe balanitis, becoming gangrenous in one part. Vaccine caused a small slough to separate, with total disappearance of the surrounding swelling, and left a small clean sore. No sign of a general reaction.

Case 12.—Subacute cellulitis of leg. Chronic indurated area which was subject to periodical acute exacerbations. Vaccine cleared up the condition promptly. No general reaction observed.

Case 13.—Streptococcal septicaemia. Patient had been ill for fourteen days when residual vaccine was first given. A previous dose with the common toxin-containing vaccine produced a reaction which lasted several days and from which no good result was derived. The first dose of the author's vaccine produced no result of any sort, and a second dose four days later also failed to make any impression. The temperature remained at about 105° all the time. The patient died four days after the second dose was administered.

These cases cannot be called promising from the standpoint of collecting a good "record" of results, but the author has acted in accordance with the belief that a remedy can only be tested thoroughly when it is given an opportunity to fail as well as to succeed. In no instance was there the smallest sign of an undesirable result due to the vaccine.

One fact is very clear: vaccine treatment can cure when other remedies have been tried and have failed, but the best results can only be expected when the vaccine is given as early as possible in the disease. It cannot be expected to resuscitate those with the death rattle already in their throats, although on occasion it seems to have come tolerably near to it.

The most important feature of all these cases is that in no case where the fractional dose system was followed did any alarming general reaction occur. The cases demonstrate the author's main contention: it is possible to administer a vaccine to a patient suffering from acute sepsis in such a manner that the vaccine is under control and the individual susceptibility of the patient prevented from causing a disastrous reaction. The system in brief is:

1. The largest dose that most chronic walking cases can tolerate without a general reaction is ascertained.
2. One-third of this dose is called the standard dose, and is administered to an acute case in two halves.
3. If after the first fraction there is neither a general reaction nor improvement, the second fraction should be given within twenty-four hours.
4. If the first dose requires both fractions, the amount of the dose should be considered to be that of the sum of the two fractions.
5. The second dose should not be given for at least four days after the completion of the first dose, and can be of the same size as the first or increased by not more than 20 per cent. If a result has been obtained with the first dose, it is doubtful if an increase of amount in the second is of much advantage.
6. It is as well to prepare two stock vaccines—one containing the streptococcus, pneumococcus, *Staphylococcus aureus*, and Hoffmann's bacillus; the other having the colon bacillus substituted for the pneumococcus, but otherwise the same as the first vaccine.

The author is much indebted to Mr. Roy R. Kerr, F.R.C.S., for providing some of the cases, and most particularly for his close clinical observation, which was largely instrumental in furnishing the facts upon which the system of dosage advocated has been built.

THE PARASITOLOGY AND CLINICAL ASPECTS OF MALARIA IN ANTIGUA.

BY

W. M. McDONALD, M.R.C.S., L.R.C.P.,

DISTRICT M.O. AND M.O.H., ANTIGUA, WEST INDIES.

THERE has not, hitherto, been any investigation into the parasitology of malaria in Antigua. The following observations, based on a record of 300 positive blood films, may be of value in providing an accurate indication of the nature of the infection with which we have to deal. Of the 300 positive films which were analysed 61 per cent. showed *Plasmodium falciparum* (malignant tertian), 28 per cent. *Plasmodium malariae* (quartan), and 11 per cent. *Plasmodium vivax* (benign tertian). The predominant infection, therefore, is *Plasmodium falciparum*.

The form of parasite most frequently found was the young form, but it is worthy of note that the classical signet-ring form was conspicuous by its rarity. The majority of young parasites seen were in the tenue form. In most cases in

which the ring form was retained, the usual form seen was a linear or circular central nucleus, surrounded by a blue body, which, as it grows, shows a thickening at one side. The largest subtertian rings seen were about one-quarter of the size of the red cell; these can be differentiated from a benign ring, first, by the sharply defined outline and decided thickening on one side (the side farthest from the nucleus), a benign ring of the same size being flimsy and ill defined, and showing a uniform thickening in contrast to a one-sided thickening. Secondly, it can be differentiated by its effect on the red cell which contains it; in a subtertian infection the containing cell is normal in size and colour—that is to say, where there is general anisocytosis or anisochromia, the affected cell may vary in size or colour within the same limits as unaffected cells, whereas, when the parasite is benign, the affected cell is always swollen, paler, and distorted, and often shows Schüffner's dots. The subtertian ring, moreover, frequently has a double nucleus, whereas this is very rarely seen in a benign ring. The difference in colour, size, and shape of the affected cells is, however, so marked that there is no difficulty in distinguishing between a benign and a subtertian ring form.

The greatest difficulty occurs in distinguishing between a young quartan and a young subtertian parasite. The young quartan often has a double nucleus, and the affected cell is generally slightly smaller than normal. I have found that the young quartan shows a more intense colouring than the subtertian, and that it does not develop the characteristic one-sided thickening of the protoplasm that the subtertian does. In a quartan infection it is usual to find two or three stages of growth in the same film, whereas in a subtertian rings only are found, or rings and crescents. I have found on only two occasions the sporulating form of the subtertian parasite in the peripheral blood; the spores were smaller and paler than in the similar stage of quartan or benign parasite; one showed thirty small spores and the other seventeen, while the pigment was black, whereas in quartan it shows yellowish-brown in the sporulating stage. Sporulating bodies are commonly found in quartan infection, the number of spores varying from 5 to 15, but averaging 8 to 10, and the spores are large and stained deep red. In the benign parasite the spores vary from 12 to 25 in number, they are much more crowded together, and the pigment is neither central nor clumped. In fact, in my experience the benign tertian parasite never assumes what is known as the "rosette" form; this form is limited to quartan and subtertian infections. Crescents were found in 32 per cent. of the subtertian cases. This is of interest in view of the fact that many authorities believe that crescents are very rarely seen in the peripheral blood.

In a recent article in the *Lancet* by Majors Pratt-Johnson and Gilchrist, it is stated that "crescents are not found in the untreated or in acute cases of the disease." My own experience does not agree with this statement. The cases in which crescents were found were all untreated cases, or at any rate cases which had not been recently treated, and whereas crescents alone are not found in acute cases, yet in many cases of acute illness crescents are found at the same time as the rings. In only three cases did I see Maurer's dots. It would appear that these dots are not dependent on differences of staining, but on some particular factor which has not yet been determined. Pigmented mononuclear cells were found in about 60 per cent. of cases. The chief characteristic of the differential count is a marked increase of large mononuclears and large lymphocytes, a reduction of small lymphocytes to about 3 per cent. of the total count, and a low polymorphonuclear percentage. Eosinophils are normal or slightly increased. The chief characteristic of the red cells is a marked anisocytosis; this is always present and varies only in degree. Abnormal changes, such as polychromasia and basophilic stippling, are sometimes seen.

Clinical Aspects.

The most striking characteristic of malaria in Antigua is the association of the subtertian parasite with clinically mild symptoms. The generally accepted view is that this parasite shows far greater pathogenicity than either of the other two varieties. Here, however, in Antigua, although *Plasmodium falciparum* is the commonest variety found, yet its malignant manifestations are apparently limited almost entirely to young children. I say "apparently" because I believe that further investigation will prove that the malignant nature of this parasite manifests itself locally, not so much in malignant attacks of fever as in the sequelae which, developing at varying intervals after a malarial paroxysm, have not hitherto been attributed to their true cause, which is malaria. I may mention in this connexion that I have recently seen three cases of nephritis, one of which was fatal, in which *P. falciparum* was found in the blood.

As a general rule, however, this infection is associated in the adult with mild symptoms. The cases under review are patients who have been well enough to walk some miles to the surgery for treatment. The temperature is low, between 99° and 101°. Cases which exhibit a definite forty-eight hours' periodicity are the exception rather than the rule. The usual type is a low fever exhibiting a mild quotidian paroxysm and sometimes a double quotidian. As a rule the spleen is not enlarged, and subjective symptoms are not marked, the patient complaining of slight pains in the limbs and general malaise, which, however, is not sufficiently marked to prevent him from working. Young children, on the contrary, suffer severely and are often acutely ill as a result of malarial infection. I have seen many cases of convulsions and coma in young children, due to infection with *P. falciparum*. The younger the child the more acute are the symptoms. In the series of cases under review there are only five fatal cases, all being children under ten years, all being associated with convulsions or coma, and all being due to *P. falciparum*. This infection is undoubtedly a very grave factor of infantile mortality.

Plasmodium malariae (quartan) exhibits a slightly different symptomatology. Patients seldom seek medical aid for a simple quartan infection. Practically all the cases which have come under my notice exhibit a quartan triplex infection, in which parasites of several different stages of growth are found at the same time, and the resulting pyrexia is quotidian. The patient, as a rule, complains of nothing beyond the fever, which clears up readily under quinine treatment, but relapses more frequently and more persistently than other infections.

Benign tertian infection shows a sharp paroxysm and a more definite periodicity, but yields more readily to treatment than either of the other two varieties. I have seen only three cases of mixed infections, the parasites found in one case being crescents, malignant rings, benign rings, and benign sporulating bodies; the other two were malignant and benign, and malignant and quartan, respectively.

Treatment and Relapses.

Owing to the fact that the cases under review are surgery patients who cannot be kept under observation or followed up it is impossible to give a scientifically complete treatment to any case, but as far as the treatment of the actual malarial attack is concerned I find that the essentials of successful treatment are (1) initial dosage with calomel and salts, and (2) large doses of quinine. The initial dosage with calomel and salts is of the greatest importance, as this makes the action of the quinine much quicker and surer. In the cases of adults I give 30 to 45 grains of quinine daily. Cases clear up very quickly under this treatment. Patients are recommended to continue quinine treatment, but as a matter of fact they never do. It is not possible, therefore, to give any treatment with a view to avoiding relapses. In this connexion it is of interest to note that relapses do not appear to be more frequent than in places where energetic anti-relapse treatment is undertaken. I have records of relapses in about 8 per cent. of the total number of cases. This record is not scientifically accurate, as the cases are not under observation, and many others may have relapsed without coming up for treatment. The greatest number of recorded relapses are quartan cases, with malignant next; and in this particular series none of the benign cases have relapsed. Of the comparatively small proportion of cases which I have been able to keep under observation I can write with certainty of the absence of relapse in the following:

Malignant (acute) treated by one intramuscular injection and 30 grains quinine daily by mouth ...	2 cases.
Treated 18 months ago; no relapse	1 case.
Treated 13 months ago; no relapse	1 ,,
Malignant; treated for 3 days only, 14 months ago; no relapse	1 ,,
Malignant; treated 10 months ago	1 ,,
Malignant; treated 3 months ago	1 ,,
Quartan; treated 9 months ago	1 ,,
Quartan; treated 5 months ago	1 ,,
Quartan; treated 14 months ago—one intramuscular and oral treatment	1 ,,

These ten cases did not receive any quinine treatment after the initial attack had subsided. In the small proportion of

cases treated by intramuscular injection four relapses are recorded. In no case did any local trouble occur as a result of intramuscular injection.

General Remarks.

In concluding this report I would draw attention to the connexion between the malaria incidence and the death rate. Our death rate is more than twice as great as that of England and Wales; and while deaths recorded as directly due to malaria provide only 2½ per cent. of the total, yet due weight should be attached to the probability that malaria, on account of its effect in lowering the resisting power of the body to other infections, is a contributing factor to many more deaths than those of which it is the direct or recorded factor, and that, further, there are strong indications that malaria sequelae are responsible for many deaths which are recorded as due to other causes. In view of these facts it cannot be too strongly represented that vigorous anti-malarial measures should be instituted throughout the island with a view to (*a*) lowering our excessively high death rate and (*b*) improving the quality and quantity of our labour supply.

THE APPLICATION OF FASCIA LATA IN PLASTIC SURGERY.

BY

CYRIL H. CUFF, M.B., B.S.DUNELM., F.R.C.S.EDIN.,

RESIDENT SURGEON, VICTORIA HOSPITAL, ST. LUCIA, BRITISH WEST INDIES.

IN a previous article[1] I ventured to enumerate some of the uses to which the fascia lata might be applied in plastic surgery. I now wish to illustrate, by a series of cases, some of the suggestions already put forward. The operations subjoined have all been carried out during the last two years, and the results, on the whole, have been encouraging. Technique must be most careful, and every effort in reconstruction should be based on strictly anatomical lines wherever possible. I have also found it advantageous to have no "slack" after suturing the fascia lata *in situ*, but rather to have the graft under slight positive tension.

CASE I.

A man was admitted to hospital suffering from a faecal fistula in the left iliac fossa the result of an old gunshot wound of abdomen. The fistula communicated with the descending colon, and was about the size of a shilling. There was no spur, and the finger could be passed freely in both directions. Operation took place on January 27th, 1920. The opening was surrounded by a free incision one-sixth of an inch from edge, the bowel mobilized, and margin of the opening infolded by a series of Lembert sutures. A portion of fascia lata from the thigh, 2½ inches by 4 inches, was sutured with medium catgut over the deficiency in the oblique muscles from the rectus sheath medially to the remains of the external oblique aponeurosis laterally. Tension in the skin wound was obviated by a pedicle flap turned down from the left hypochondriac region. The wound healed under one dressing, and when last heard of in December, 1920, the patient was doing well.

CASE II.

A man, who had sustained a gunshot wound of left forearm, was admitted with partial wrist-drop and inability to extend fingers or thumb at terminal phalanges. He had a long scar along the upper half of the posterior aspect of forearm, and some obvious loss of muscle substance. An operation was performed on May 18th, 1920, a long exploratory incision being carried over the scar, extending to the wrist. Upper portion of the extensor muscle was found to be healthy; the lower portion and communis tendons in the upper part were an adherent mass of fibrous tissue. Tendons just above posterior annular ligament were healthy. The intervening scar tissue was freely excised, and the communis and extensor longus pollicis tendons identified below. The extensors of the carpus were freed from the overlying scar tissue. A fascial flap 4 inches by 1½ inches was cut from left thigh and split in its lower half. The upper portion was sutured to the healthy belly of the extensor communis digitorum and longus pollicis, the hand and fingers being in a position of dorsiflexion. The lower divided portion was sutured to the communis tendons and longus pollicis. The hand was put up in a long "cock up" splint, sutures removed at the end of three weeks, and gentle passive movement commenced. At the end of two months a fair degree of movement in the fingers was obtained, and even more in the thumb, but on the whole the benefit was less than anticipated.

CASE III.

A man was admitted with an old gunshot wound of the middle third of left shin. There was a painful adherent scar, about 2 inches long, about the middle of the subcutaneous border of tibia. At the operation on April 22nd, 1920, the scar was freely excised, also the underlying scar tissue. The edges of wound were undercut and two parallel tension incisions made, 1 inch from sides of wound. A flap of fascia lata 2 inches by 1 inch was sutured to the periosteum, with the fatty side subcutaneous, and the wound closed without tension with three sutures of "bipped silk." The result was very satisfactory, the new scar remaining elevated and painless.

CASE IV.

A man was admitted suffering from an old gunshot wound of the mandible with non-union and loss of substance on the left side. There was a gap of 1 inch midway between the symphysis and angle. The fragments were largely subcutaneous, as there was loss of masseter and facial muscles, and the skin was adherent to the bone. Operation was performed on July 5th, 1920, a curved incision being made, commencing at the lobule, to the symphysis. Fragments were freed from skin and scar tissue, sclerosed tips excised and a gutter cut in them in the usual manner with an Albee saw. A graft was cut from the tibia 2½ inches long and secured in the gutter with kangaroo tendon. A strip of fascia lata 4 inches by 1½ inches was then carefully wrapped around the graft and sutured to periosteum of fragments. The skin was closed with horsehair. At first there was some serous discharge, which lasted for nearly a month, but finally the wound closed and the result was very satisfactory. The fascia lata probably saved the graft in this case.

CASE V.

A man was admitted to hospital suffering from hernia of the right lung, through the third interspace, about the nipple line. There was a tympanitic swelling, about the size of a cocoanut, and a marked impulse on coughing, reducible on pressure. The conditions had followed upon an old injury to the chest by the shaft of a cart. Operation was performed on September 8th, 1920, a large curved incision being made from the anterior axillary fold, across the right chest and down towards the ensiform cartilage. The pectoralis major was split about its centre, and the sac (formed by the parietal pleura) dissected off the thin and stretched pectoral muscle and ribs. The third and fourth ribs were found to be widely separated. During this dissection, the sac was accidentally incised and air rushed in. The opening in the pleura was closed with a purse-string suture of catgut, and the sac, after being separated, was invaginated through a defect in the intercostal space. Following upon a suggestion of Professor Rutherford Morison, advantage was taken of a lipoma, situated over the right deltoid. This was dissected out, split into two portions, and inserted into the defect. A sheet of fascia lata 4 inches by 2½ inches was stretched firmly over this and sutured to the divided and separated periosteum of the rib above and below. The pectoral muscle was then adjusted and the wound closed. A report dated January 12th, 1921, states that the chest in the position of rest is quite flat, and with the hardest cough the patient is only able to produce a small impulse without any bulge.

CASE VI.

A pensioner was admitted with "drop-foot," the result of nerve injury consequent upon a gunshot wound of the thigh. Previous operations for nerve suture and for tendon transplantation had failed. At an operation performed in June 29th, 1920, the tendo Achillis was lengthened subcutaneously, the base of the fifth metatarsal and tubercle of scaphoid exposed through small incisions, and the crest of the tibia and fibula exposed through a 3-inch curved incision at the junction of lower and middle thirds. The aponeurosis of the tibialis anticus and peronei was split in the line of incision, and the periosteum of both bones exposed. Fascia lata of right thigh was exposed through a 12-inch incision, and a portion 12 inches by 2 inches removed. This was split from below upwards for 7 inches, thus resembling a pair of trousers. The upper portion was sutured deeply to the periosteum of the tibia and fibula, and to the split aponeurosis. The lower bifurcated portion was pulled down by tunnelling the subcutaneous tissues with forceps, and a limb drawn into each of the two lower wounds. Here with the foot in full dorsiflexion all slack was taken up, and the two strips sutured to the periosteum of the scaphoid and the fifth metatarsal respectively, and to the plantar fascia. The wounds were closed with silkworm gut and a back splint applied. In January, 1921, he could walk well without any special boot.

CASE VII.

A man was admitted with partial rupture of the short head of the biceps of the left arm, the injury having occurred three months before admission. On examination, there was a small hard nodule at the junction of upper and middle thirds of the left arm, on the medial aspect, and above this, a definite hollow. Movements of flexion and supination were weak and very painful.

An operation was carried out on September 20th, 1921, a long incision being made from the coracoid, along the antero-internal aspect of the upper arm to the junction of middle and lower thirds. The scar in the biceps was located just about the junction of the two heads. The site of the scar was firmly adherent to the underlying brachialis anticus. Adhesions were separated, and the tendon of the short head, which was torn and slack, tightened up. A strip of fascia lata, 4 inches by 2½ inches, was then wrapped round the site of rupture, and secured with catgut sutures. A further small portion was sutured over the scarred area on the brachialis. The wound was closed in two layers, and the arm slung in a "dog collar," in semiflexion. At the time of writing the arm is gaining power daily, and movements are free from pain.

I have selected these cases as fair examples of the practical uses to which the fascia lata may be put. It has, of course, been utilized for many other purposes, and doubtless others will yet be devised.

I wish to thank the Council of the Newcastle-upon-Tyne and Northern Counties Medical Society,[2] Professor Rutherford Morison, and Dr. W. K. Russell, for permission to include Cases v and vi.

REFERENCES.

[1] BRITISH MEDICAL JOURNAL, April 2nd, 1921. [2] *Newcastle and Northern Counties Medical Journal*, April, 1921.

A CASE OF SLIPPING PERONEAL TENDONS TREATED BY KELLY'S OPERATION.

BY

D. W. HUME, M.B., B.S.LOND., F.R.C.S.ENG.,

MEDICAL SUPERINTENDENT AND SENIOR SURGEON, MINISTRY OF PENSIONS HOSPITALS, EXETER.

W. B. F., aged 22, was admitted to the Ministry of Pensions Hospital, Streatham Hall, on July 10th, 1921, complaining of pain and weakness in the right ankle, and inability to walk any distance.

History.

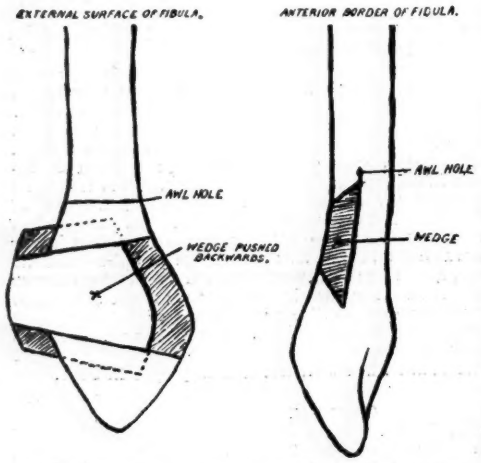
He stated that while at physical training in June, 1918, he fell and twisted his ankle rather badly. The injury was diagnosed as a sprain, and he was sent to hospital. Nothing definite was discovered on *x*-ray examination, and his leg was put on a back splint for five weeks. After this he was given massage for six weeks, followed by a stay of two months in a convalescent camp. He was demobilized in January, 1919. For some time after this his ankle swelled at night, and his leg and foot were put in plaster for seven weeks, but, after the plaster was removed and he was treated by massage and exercises, there was still some swelling of the ankle at night, and, on extreme flexion or extension of the foot at the ankle-joint, something slipped on the outer side of the joint, giving rise to much pain locally and a jarring sensation up his leg and body.

Condition on Admission.

On admission the movements at the ankle-joint were good, and there were no signs of any disease of the joint, but on dorsiflexion a distinct slipping of the peroneal tendons could be felt. A skiagram did not show any damage to the ankle-joint. An operation for retaining the peroneal tendons in their normal position was necessary, and I decided to perform that described by Mr. R. E. Kelly in the *British Journal of Surgery* for April, 1920.

Operation.

On January 26th, 1921, I made a hockey-stick-shaped incision immediately behind the fibula, commencing at a point about 2½ inches above the lower extremity of the bone, and following the course of the tendons downwards. The incision was deepened and the periosteum covering the outer surface of the fibula was incised and stripped, so as to expose the outer surface of the bone and its anterior and posterior borders. The peroneal tendons with their synovial sheath were retracted with the periosteum stripped from the posterior border. At a point about 1½ inches from the lower end of the fibula on its anterior border, and midway between its external and internal surfaces, a hole was bored horizontally backwards through the bone with a small bone awl. This hole was enlarged downwards and parallel to the external surface with a Gigli saw, and when the cut was large enough to admit the point of a Hunter-Mackenzie saw, this instrument was used, until the cut reached a point about half an inch from the extremity of the bone. Two cuts were now made in a horizontal direction but approaching one another posteriorly to join the vertical cut, so as to free a wedge-shaped piece of bone with its narrow end at the posterior border of the fibula. The saw was sloped while making these cuts, so that the external surface of the wedge was narrower than the internal surface. The wedge thus formed could only be removed from the bone by sliding it forwards, and when it was pushed backwards and tapped gently it became fixed in the groove made by the saw cuts, with about a quarter of an inch projecting from the posterior border of the bone, thus making an external lip to the peroneal groove. It was found, however, on attempting to bring the superficial tissues together over the bone, that there was a tendency for the wedge to slide forward in its groove, but this was easily prevented by raising the floor of the groove slightly in front of the wedge with a chisel.



Diagrams illustrating the method of cutting the wedge. The wedge is shown wider than is necessary. The dotted lines indicate parts of the wedge in the slot in the bone.

After the wound had been closed, the foot was put in plaster, with a window over the incision, in a position of plantar flexion.

Result.

The plaster was removed one month after the operation, and recovery was uneventful. The movements at the ankle-joint were perfect, and no slipping of the tendons could be obtained. The patient states that he is cured, and that he has none of his previous difficulties in walking.

A skiagram taken six months after the operation showed the wedge firmly fixed in the position in which it was placed.

The main difficulty in the operation is, as pointed out by Kelly, the thickness of the saw. Allowance has to be made for this in the inclination of the horizontal cuts to one another, so as to avoid too great projection of the posterior part of the wedge when driven into position. A small fretsaw, such as is used by watchmakers, would be an excellent tool for this operation, and I propose to use it in future cases. It is also rather difficult to avoid injuring the synovial sheath of the peroneal tendons, and I accidentally made a small opening into it in this case, but no harm resulted.

THE INTERPRETATION OF SYMPTOMS IN DISEASE OF THE CENTRAL NERVOUS SYSTEM.

ABSTRACT OF THE GOULSTONIAN LECTURES, DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS,

BY

ANTHONY FEILING, M.D., F.R.C.P.,

PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, LONDON.

LECTURE III.

IN this final lecture Dr. Feiling said that he proposed to deal with some of the more general rather than the particular aspects of disease of the central nervous system. Any discussion on the interpretation of symptoms could not fail to take account of the principle laid down by that master mind of modern neurological theory and practice, Hughlings Jackson, who distinguished between negative and positive symptoms, a negative symptom implying some definite loss of function, and a positive some accelerated function. The actual symptom-complex produced by disease provided, more frequently than not, both positive and negative symptoms, destructive lesions producing the latter, and irritative lesions the former. The term "irritative," as applied to a pathological lesion, must not be interpreted too narrowly, in the sense of a mere mechanical irritation. Brief or temporary circulatory disturbances might be included in such a category, and the convulsions or deliriums occurring in various states of toxaemia were to be regarded as positive symptoms produced through the medium of the circulation. It must be understood also that when a destructive lesion occurred in the nervous system it did not follow that the ensuing disorder of function was necessarily due to that destructive lesion itself; it might be due, wholly or in part, to the unbalanced action of other parts of the nervous system.

Negative and Positive Symptoms.

The same morbid process might produce at one and the same time negative and positive symptoms. The early stages of syphilis of the central nervous system, for example, might be marked by pain—a positive symptom—while later on negative symptoms in the shape of palsies made their appearance. A more difficult question to decide was whether pain and other subjective sensory disturbances could occur as the result of purely destructive lesions, for this would seem to imply that positive symptoms could be produced by such lesions.

The lecturer did not wish to suggest that in investigating any disease of the nervous system it was necessary to set out by classifying symptoms as negative and positive. It was only necessary to realize that there were these two kinds of symptoms, and from such realization one was led to consider the nervous system as a whole. The consideration of these principles had its value when one was confronted with the task of localizing a lesion in the central nervous system. It was notorious how misleading in such cases the signs might

be. A palsy of the sixth cranial nerve, occurring as a late event in intracranial tumour, furnished an illustration of a late sign which frequently had little or no localizing value.

Disorders of the Cerebral Circulation.

In the two previous lectures he had been concerned principally with symptoms arising from disease of the central nervous system itself; but it was a matter of everyday experience that many of the symptoms of which patients complained were to be interpreted as disorders of function produced by temporary or recurring disturbances in circulation. Such disturbances might be quantitative, as anaemia or hyperaemia, or qualitative, in which there was some chemical or biochemical alteration in the blood itself. Symptoms referable to the nervous system formed a not inconsiderable part of nearly all forms of cardio-vascular disease, but there were many other conditions in which disorders of the cerebral circulation played a leading part. One of the previous Goulstonian lecturers (Dr. Risien Russell, in 1909) had dealt fully with disorders of the cerebral circulation, so that it was not necessary for him to cover the same ground. It was well known how epileptiform convulsions, quite indistinguishable from those of ordinary epilepsy, might occur in many toxic states—eclampsia, lead poisoning, and so forth—and typical epileptiform convulsions might be seen in cases of heart-block constituting the Stokes-Adams syndrome. There seemed to be some common ground between all these different conditions where the immediate or proximate cause of the convulsion could be fixed. Such cause, to his mind, lay in some disorder of the cerebral circulation, and on this point he was in absolute agreement with Russell as well as with many others.

It became a principle of some importance, therefore, to regard a fit as a symptom only, and not as a disease *sui generis*. Mr. Percy Sargent, in his presidential address to the Neurological Section of the Royal Society of Medicine, had related that in a series of 270 cases of brain tumour operated on by him a fit was the first symptom complained of in 40 per cent. This was probably an unusually high proportion, for there were many cases of cerebral tumour in which fits never occurred at all, and, in addition, many cases of cerebral tumour which never found their way into the hands of a surgeon. The mere presence of cerebral tumour was not of itself sufficient to cause a fit. It was the same with injuries; one might hazard the assumption that there were probably a great many people nowadays with foreign bodies embedded in their skulls who did not suffer at all from epilepsy.

The Cause of Epilepsy.

The textbook descriptions of the fits of epilepsy and of hysteria led the reader to suppose that there was a great distinction between them. In practice such distinction was not always evident, and increasing experience had taught the lecturer the great difficulty of making a diagnosis in some of the periodic attacks of apparent loss of consciousness which he was called upon to treat. It was, of course, well recognized that many epileptic attacks might be precipitated by various psychical conditions or emotional stresses. Recently an attempt had been made to include epilepsy among the group of diseases or symptoms which might be said to have a psychogenic origin. Such an explanation might seem at first sight fantastic, but there were certainly cases where attacks similar to those of idiopathic epilepsy had yielded to psychological treatment. There was another school which would include epilepsy among the group of so-called toxic idiopathies, thus bringing it into line with such conditions as asthma, hay fever, and urticaria; and here also there were cases which seemed to support this view. Whatever might be the exact physical production of epilepsy, the final cause must, to his mind, lie in a disturbance of the cerebral circulation.

It was only in comparatively recent years that the involuntary nervous system had received much attention at the hands of clinicians, who were just beginning to realize the wide part which it played in the production of symptoms. It would be wise to recognize that multiple causes might be at work. Perhaps observers were too much occupied with symptoms in attempting to correlate disturbances of function with actual structural disease. Even in cases where actual structural disease of the central nervous system was present, *post-mortem* examination would not always succeed in connecting symptoms with the actual morbid anatomy.

"Organic" and "Functional."

In conclusion the lecturer spoke on the use and abuse of the terms "organic" and "functional" as commonly employed in connexion with disease of the nervous system. In investigating cases of disease of the central nervous system it was in reality disturbances of function which were studied rather than alterations in structure produced by disease. Hence the continued use of the terms "organic" and "functional" might be misleading. The term "functional" had gradually become identified with the broad meaning of "hysterical," and on looking more closely into the results produced by this abuse of the term it would be found that it was diseases in which permanent changes in the reflexes occurred which were called organic, and that unless such changes could be demonstrated there was a great risk that the case would be called functional. No doubt many of these cases were really functional, but the special connotation which this term had come to possess made its application deceptive. The distinction between organic and functional, although at first useful, had ceased to serve its purpose. The necessary distinction was between symptoms caused by physical influences and those caused by mental influences only. Physical changes might be permanent—such as gross destruction of nerve fibres; or they might be temporary—such as circulatory defects or alterations in the volume or composition of the blood. Similarly with mental or psychical factors: these might induce bodily reactions which persisted and led to permanent changes in bodily functions; yet no one would speak of a disease like diabetes as functional. It was illogical, he maintained, to identify the term "functional" with the term "hysterical." The term "functional" could very well be dispensed with altogether, for all diseases of the central nervous system were functional in the sense that a disorder of function was produced. What it was really necessary to know was whether or not a disease was due to permanent structural change in the tissues, and, if it was, whether the cause was physical or mental, or both. The attempt to draw a hard-and-fast line between organic and functional nervous disease was fraught with no little danger. Equally misleading was the idea that there must be two classes of neurologists, one to deal with organic and the other with functional cases. It was to be hoped that no such distinction would be recognized. The nervous system functioned as a whole, and should be studied as a whole.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HYPERPYREXIA DURING INFLUENZA.

G. C., a school teacher, aged 42, was some years before this recorded illness an in-patient at Bath Hospital suffering from haematemesis (and subsequent thrombosis of the veins of the leg), and during her seven months in hospital is stated to have registered a temperature of 110° F.

During the month of March, 1919, she complained of "pains across the shoulders, back of the head, and neck." Examination revealed nothing save a slightly furred tongue and an axillary temperature of 107° F. On advising the relatives to have a consultant's opinion, in view of the hyperpyrexia, they expressed little or no anxiety, as she had "had a higher temperature before at Bath."

Dr. Carey Coombs saw the case in consultation on the following day. There was no evidence of any organic disease. The axillary temperature registered 110° F. It was taken by me personally, using two thermometers, one in each axilla. The thermometers were both graduated to 113° F., and appeared capable of registering not more than 114.5° F. That same evening the thermometers registered 113° F. +, which fact I communicated to Dr. Carey Coombs. The patient at this time complained simply of headache. On the third day the temperature fell steadily to the region of 104° to 105° F., and remained so for several days, only to rise about the fourteenth day again to 113° F. +. Though the columns of mercury filled, in both cases, the capillary to the utmost limit, neither thermometer was broken as the result of the patient's hyperpyrexia.

After an interval of some two or three weeks a third rise, terminating as before by lysis, was registered.

After fourteen weeks' treatment at home (during which time the patient lost several stones in weight) I was sent for

on June 10th as the patient was again complaining of "headache." The temperature registered was 107° F. This was apparently the commencement of the fourth "exhibition," and I at length persuaded the patient to go into hospital. On June 11th, in hospital, the temperature registered 104.5° F. After that day, in spite of an attack of Vincent's angina, her temperature for the most part remained subnormal for the succeeding nine weeks. The patient is still alive, and is now under surgical care for a Colles's fracture.

The following comment by Dr. Carey Coombs (written on the patient's discharge from hospital in August, 1919) appears in the hospital records:

I saw this patient at her own home with Dr. W. G. McKenzie. We neither of us had any doubt that the very high temperatures recorded prior to admission were genuine. One evening temperature recorded was 114° F., and there were others nearly as high. During these hyperpyrexial crises she looked very ill, but neither then nor at any other time did she display signs of any organic cause. Indeed, when she did have a good excuse for fever (Vincent's angina) nothing out of the way happened.—C. F. C.

WILLIAM GEORGE MCKENZIE,
M.C., M.R.C.S., L.R.C.P.,
Late Captain (Acting Major) R.A.M.C., T.F.

SLIPPING RIB.

LUXATION of lower costal cartilages, to which Mr. Davies-Colley has given the appropriate name of "slipping rib," cannot be very rare. I have met with a few cases.

Some time ago an agricultural labourer was admitted to this hospital suffering from slipping rib, in a very similar way to the examples given by Mr. Davies-Colley. Although, with the stoicism of his class and nationality, he bore with the disability for some years, he had to give in to it at last and seek relief. In his case it was the ninth rib on the left side which was at fault. As the interchondral articulations often include the ninth costal cartilage, I took the condition to be a luxation of this joint. I treated it in a way precisely similar to that which Mr. Davies-Colley practised—namely, excision of about three inches of cartilage and rib. The result was perfect relief from unbearable pain.

I have a case of the same condition at present under my care; the costal cartilage of the ninth rib on the right side slips easily upwards and forwards. The condition gives rise to no pain and the patient does not complain of it, having other troubles of a more serious nature.

R. B. MAHON, M.Ch., F.R.C.S.Eng.,
Surgeon to Galway Central Hospital.
Galway.

THROMBO-PHLEBITIS OF THE FEMORAL VEINS FOLLOWING LOBAR PNEUMONIA.

THE extent of venous thrombosis in the lower limbs following right-sided lobar pneumonia appears to warrant the publication of the following case:

On January 4th, 1922, a girl, aged 22, had an attack of influenza; she recovered, but it left her in rather a debilitated condition. On the evening of February 4th I was called to see her as she complained of severe pain in the right side of the chest, especially on taking a deep breath. The temperature was 103°, pulse 100, respirations 40. Physical examination of the chest revealed lobar pneumonia in the lower lobe of the right lung. For the next six days she was very ill, but on the seventh her temperature dropped by crisis and she fell into a comfortable, undisturbed sleep.

For the next day or so she made good progress, but on February 15th she complained of much pain and tenderness over the left calf, and over the front of the right thigh in the region of Scarpa's triangle. The femoral vein in the upper part of Scarpa's triangle could be felt as a firm, rather nodular, very tender, thickened cord; the limb was swollen, the tissues around the ankle were soft, and pitted on pressure. Pain was so severe that I had to give morphine, but subsequently it was much relieved by two-hourly applications of belladonna fomentations.

In a week the limb had improved considerably, but the patient then complained of similar pain in the left lower limb: there was tenderness over the left femoral vein, and the calf of the leg was very swollen and tender. Swelling persisted in this leg for several days after the pain had disappeared, but massage and passive movements soon reduced the leg to its normal size.

It is interesting to endeavour to explain the actual causation of a condition of thrombo-phlebitis of the peripheral veins after pneumonia. It has been pointed out that a microscopical examination of the blood in pneumonia shows a greater density than normal of the fibrin network. Blood platelets are also greatly increased in number. Hence there is possibly an increased tendency to intravascular clotting, and since in a large proportion of all cases of pneumonia pneumococci are present in the blood, infection of clot would more readily ensue.

T. STENNER EVANS, M.B., B.S.Lond., D.P.H.
Fochriw, Glam.

Reports of Societies.

THE TECHNIQUE OF BONE GRAFTING.

AT a meeting of the Section of Surgery of the Royal Society of Medicine on April 5th, with Mr. CYRIL NITCH in the chair, some points in the technique of bone grafting were brought forward by Mr. C. MAX PAGE and Mr. G. PERKINS.

Mr. MAX PAGE, whose account of the work of himself and his colleague was illustrated by a large number of radiograms, said that bone grafting was now firmly established in the treatment of ununited fractures and the replacement of bone destroyed by disease or injury. It must be admitted that some parts of the life-history of bone grafts were still obscure or in dispute, and that there was considerable divergence of opinion as to the technique best adapted to secure a successful result in bone implantation. The number of bone injuries so treated during the late war, however, furnished an extensive experience, and it should be possible now to arrive at certain conclusions. He proposed to confine his remarks to cases in which he had employed a bridge graft—that is, a bone implant which filled in a definite gap in the original bone and ultimately reconstituted a part of it. He did not believe that the graft played only the humble rôle of scaffold which was assigned to it by some authors. Some portion of it at least grew and became incorporated with the host-bone. If it was assumed that the bone graft died after implantation and only acted as a scaffold, it was difficult to see why boiled beef-bone should not have the same value as autogenous, but this was not so, as he illustrated from a case in which a beef peg, even after sixteen months, showed no union with the host-bone, while an autogenous graft in a similar case became continuous with the host-bone within six weeks.

These cases (Mr. Max Page continued) confirmed the general evidence that the beef-bone peg was useless as a bridge graft, and therefore he always employed autogenous grafts. The most satisfactory source was the tibia in the greatest number of cases. The use of the fibula was favoured by some surgeons, but it might be urged against the use of this bone that its exposure and separation were not simple, and that its removal could not fail to affect the stability of the ankle. The constituents of the bone employed might be compact bone, periosteum, and cancellous bone. Compact bone was essential for strength, but it did not appear to take an active part in the formation of new bone after implantation. Periosteum had little importance in the reformation of bone in the adult, and lately he had used grafts free of periosteum. Cancellous bone seemed to be the route along which bone development occurred. The size of the graft should be two or three inches longer than the gap it was intended to bridge. The longer the graft the firmer the fixation, and with a substantial graft there was less liability to fracture and more rapid re-establishment of the full strength of the affected part. It was important that at operation the fragments should be brought into their normal alignment without tension. Both ends of the host fragments must be resected until good vascular bone was exposed. The graft must be fixed in firm contact with the host at both ends, and unless this was done success was unlikely. The method of fixation mattered little, provided the result was firm. Mechanically the most satisfactory method in his hands was intramedullary pegging at one end and what might be called an inlaid splice at the other, making a tight fit. Foreign material, such as bolts and wires, was undesirable, though necessary at times. The graft should be aseptic and planted into an aseptic field, but the presence of infection and a successful graft were not incompatible. He showed radiograms of a case which illustrated the ability of a graft to survive and thrive, despite severe infection of the surrounding tissues.

Fractures of the graft fell into two categories: (1) Early fractures, taking place within eight weeks or so after operation, while the limb was still immobilized, and there was no strain upon the bone. These fractures occurred at the junctions with the host, following non-union of one or other end of the graft, and they were really instances, not of true fracture, but of bone absorption, secondary to incomplete fixation. (2) Late fractures, occurring in cases in which the graft had been successful, with firm union at both ends. The site at which these fractures occurred was usually near the middle of the graft, and they took place owing to some strain after the limb had been released from immobilization. They

belonged to the same category as fractures of normal bone, and did not denote any shortcoming in operative technique. The prognosis of these two varieties of fracture differed widely. In the early fractures the graft definitely failed, and union never occurred. In the late or traumatic fractures union did occur, at any rate in some cases if the surgeon waited long enough.

In post-operative treatment after grafting three stages were to be noted: (1) Absolute rest and immobilization for six weeks following operation in order to establish vascular continuity; (2) partial function after six weeks or so, when light use of the limb might be permitted, governed by splints; (3) complete function, when the graft had consolidated, and the strength was estimated by means of radiograms to be about half that of normal bone. The time which must elapse before full function could be permitted varied with the case and with the bone. Full function could be allowed for the radius earlier than for the tibia. The success of the graft also varied with its situation. In the humerus no special difficulties had been found, given satisfactory splint fixation. Among six bridge grafts of the humerus he had had only one failure. The radius was grafted with the greatest ease, and there had been no failures in nine consecutive cases. The ulna was less satisfactory, either because at the time of operation the fragments were not aligned without tension, or because the usual position for immobilization after grafting was incorrect. Out of seven grafts in the ulna there had been five failures. In the tibia the grafts in the upper and middle thirds gave good results; in the lower third the prognosis was doubtful. Among seven grafts of the tibia there had been three failures. Inadequate fixation of one or other end of the graft into the healthy host-bone was the factor chiefly responsible for non-success.

The CHAIRMAN asked whether, in cutting the graft, Mr. Page used an Albee saw or a hand saw. Some who were in the habit of grafting had given up the Albee saw because they believed that with heating it damaged the vitality of the bone. He also asked whether these operations had been done in one or two stages—whether the cavity and the bones had been first prepared and the wound closed, and then the graft implanted at a later date when it was quite certain that all pyogenic organisms were absent.

Mr. P. JENNER VERRALL agreed with what Mr. Page had said about mild sepsis not interfering with the result of the graft. Some two years ago, when he was using lateral grafts almost exclusively, and drilling both graft and host-bone, on two occasions in the radius he had the drilled ends come out with sequestra, and the rest of the graft united with entire satisfaction. In some of the cases of what might be called "aseptic digestion" of the graft to which Mr. Page had alluded he had found that the Wassermann reaction was positive. He did not quite agree with what Mr. Page had said about the use of the fibula. His own practice was to use it in grafting on to the humerus if by the more usual method of fixing the ends of the humerus together with a small intramedullary peg the humerus would be made ridiculously short. It so happened that the fibula almost exactly fitted inside the humerus, and he had bridged the humerus in this way in seven or eight cases, with success in all but two. One necessary caution, however, was that rather prolonged fixation was necessary with these long grafts in the humerus. The ablation of the fibula produced no ill effects on the leg whatever, nor was it difficult to perform. The great point was not to go too low down. The upper two-thirds of the fibula could be removed with complete impunity. He emphasized the value of the fibula particularly for bridging gaps where one end was free. On two occasions he had used the head of the fibula for the head of the humerus. The ulna was notoriously unsatisfactory, and he suggested that the extraordinary frequency with which ununited fractures appeared at the end of the ulna was associated with the subluxation forwards of the head of the radius. He had had several cases of the kind, which greatly complicated his methods of fixation. He thought the complete supination position kept the head of the radius in place and enabled the radius to act as a stabilizing influence. He was surprised that Mr. Page allowed any movement in the limbs as early as six weeks after grafting.

MR. MAX PAGE, in reply to the Chairman's questions, said that he used the Albee saw, and thought that if the saw was kept properly irrigated there was no danger of necrosis of the graft. He had had to resort very seldom to the two-stage operation; as a rule it was possible to get on with the complete operation right away. He admitted that the radiographic appearance of some of the grafts was very suggestive of infection, but on the other hand there was evidence in a good many cases of a successful graft with infection above it. He and his colleague never used the fibula now for taking a graft, and therefore he could not contest the value of Mr. Verrall's methods in this respect.

TREATMENT OF UTERINE FIBROIDS.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on April 6th, Professor HENRY BRIGGS presiding, a discussion took place on the treatment of uterine fibroids.

Dr. W. FLETCHER SHAW, in opening, said that at the Annual Meeting of the British Medical Association in 1914 Dr. Archibald Donald stated that in a series of 309 hysterectomies which he had performed for fibroids, the mortality had been 2.9 per cent., and in view of the favourable results Dr. Donald strongly advocated operation in preference to *x*-ray treatment. He was followed by Professor Gauss of Freiburg, who pleaded for *x* rays, which he claimed gave as good results as operation; but in the succeeding discussion every British radiologist supported Dr. Donald. Since 1914 many articles had appeared in the medical press advocating the use of *x* rays, and therefore it seemed that the subject might well be discussed again in the light of later experience. Undoubtedly one great risk in operation was the occurrence of thrombosis followed by fatal embolism, and it was two recent disasters of this nature in the speaker's practice which caused him to set about a review of the subject. The basis for comparison must be a consecutive series of cases of uterine fibroids treated by one or other method, and a fair estimation of what the results would have been had the alternative method been adopted. During the years 1920 and 1921 he had notes of 138 patients operated on for uterine fibroids, the operation in the great majority of cases being supravaginal hysterectomy. The number of deaths was four, including two from embolism, one from shock, and one from acute nephritis. This mortality would not have occurred under radiation treatment, so that on the primary results radiation had the advantage, and, unfortunately, in literature many radiologists confined themselves to assessing primary results. But there was another side to the question. Microscopical examination was not carried out in all these cases, but among the cases in which it was carried out five cases of malignant disease were discovered. Had these five cases been treated by radiation as ordinary fibroids there was little doubt that the growth would have continued, and the ultimate death of these five patients after ineffective radiation must be set against the four post-operative deaths. Then there were twenty-two cases of marked degeneration, and it was extremely difficult to be sure without operation that a tumour was not degenerative. Adhesions between the uterus and abdominal viscera would be a contraindication to *x* rays, and yet it often happened that these adhesions, like degenerations, remained undiscovered until operation.

Altogether, from a study of his cases, including as they did various complications which would have rendered radiation ineffective, Dr. Fletcher Shaw could only come to the conclusion that the routine treatment of uterine fibroids by radiation was quite unjustifiable. Apparently a simple, uncomplicated, undegenerated fibroid might diminish in size and cease to bleed as a result of *x*-ray treatment; but how could one be certain that it was non-malignant and free from complications and degenerations? In only one group of cases was he inclined to admit that radiation might be useful: these were cases in which the haemorrhage was so severe that the patients were rendered too anaemic to stand operation without undue risk. Unfortunately, the radiologists did not seem willing to take these blanched cases.

Dr. SIDNEY FORSDIKE said that Dr. Shaw had been more generous to the advocates of radiation than he need have been. A certain number of cases failed entirely to respond to *x* rays and subsequently came to operation. The great claim of the radiologists was that they avoided the risk of administering an anaesthetic, but clearly for diagnostic purposes in gynaecology such administration was necessary.

Mr. EARDLEY HOLLAND said that in 1914, in view of the advocacy of radiation in many quarters and its obvious advantage over surgery, given equally good results, he sent eight private patients to radiologists of distinction, but the results were disappointing. In two cases the fibroids were extremely small, and here the treatment was successful. In

two others the patients, after three or four courses of *x*-ray treatment, ultimately came to operation. Another patient, although cured of the fibroid, had a severe *x*-ray burn, and yet another had a burn without having been improved by the treatment. The remaining two cases he was not able to follow up, owing to the outbreak of the war.

Dr. S. J. CAMERON said that the more he studied the complications and degenerations of uterine fibroids the more convinced he was that these tumours were, if not an imminent, at least not a very remote source of danger to the individual, and he failed to see how radiation could prevent such complications and degenerations. He believed that from the point of view of risk the rival methods were about equal. Being a Glaswegian he held strongly that if silk were discarded in favour of catgut operations would be much safer. He believed that many deaths occurred from infective processes set up through the silk. With the right technique mortality from operation would be much less than mortality from *x*-ray failure.

Dr. A. E. GILES said that most of those who advocated the treatment of fibroids by *x* rays put forward a long list of exceptions, and perhaps the list might with propriety be lengthened. If a case could be guaranteed as free from malignancy, complications, degeneration, and adhesions, it might be suitable for *x*-ray treatment; but there was another important consideration. Years ago, because of the risk attaching to hysterectomy, the operative treatment for fibroids consisted of removing the ovaries; but as the mortality from hysterectomy declined it began to be asked why healthy organs should be sacrificed for the sake of a diseased one. By all accounts the radiologists reckoned upon the atrophy of the ovaries by *x*-ray action, so that this was simply going back to the old-fashioned operation with its obvious objection. As to surgical risk, his own experience included 960 hysterectomies for fibroids, and the total number of deaths was 17; but 12 of these deaths occurred in the earlier years, among his first 300 cases, and the more recent mortality after hysterectomy in his practice was, he believed, less than 1 per cent. Myomectomy, despite obvious limitations to this procedure, had an important scope, and in many of his cases—about one out of five—the fibroid was taken away and the uterus left.

Dr. LAIDLAW SMITH said that in his early years, appalled by the mortality of hysterectomy, he went over to Paris and learned Apostoli's method of treatment with continuous galvanic current. He treated more than a hundred cases in that fashion, and they did very well, and there was no mortality. But operation on the whole was more satisfactory, and with the fall in the mortality after hysterectomy he reverted to that procedure. On several occasions he had removed the fibroid during pregnancy, and the pregnancy had gone on to full term.

Dr. CLIFFORD WHITE asked what was the state of the tumour in those cases in which the unfortunate gynaecologist had to do a hysterectomy after *x* rays had been unavailingly applied. If as a result of previous *x*-ray treatment the operation was rendered unduly dangerous on account of adhesions, the ensuing mortality should be put down to the radiologist, not to the surgeon.

The PRESIDENT supported the general opinion of the Section as to the advantages of surgery; and Dr. FLETCHER SHAW, in replying, referred to the number of degenerated tumours which had to be removed after the menopause. Frequently it was necessary to operate upon acutely degenerative tumours in oldish women, and the risk with radiation treatment of such a thing occurring after the menopause outweighed in his opinion the risk of primary mortality on operation.

Extension of Carcinoma of Cervix to Vagina.

Dr. ARCHIBALD LEITCH, at the same meeting, made a communication, illustrated by the microscope and epidiascope, on the extension of carcinoma of the cervix to the vagina. He said that from an observation of a number of cases of carcinoma of the cervix in which there were secondary deposits, and also from a study of recurrences, gynaecologists must feel that the vagina in cancer of the cervix uteri was a very dangerous zone. An analysis he had made of *post-mortem* findings in cases of carcinoma of the cervix showed that out of 847 cases there was vagina involvement in 826. Such involvement was absent in only 2.5 per cent. He did not think that this danger of vagina involvement was sufficiently met by modern operative procedures, and the removal of a considerable portion or the whole of the vagina might be a wise precaution.

The main route by which the vagina became involved was by continuous lymphatic spread direct from the cervix. But there was another mode of possible involvement of which he wished to speak. In the older textbooks, and in some which claimed to be modern, the possibility of contact transference of cancer was put forward by three examples: from the breast to the inner surface of the arm, from one lip to the other, and from the cervix to the posterior wall of the vagina. In all these cases it was difficult to see how such transference could take place in view of the septic character of the surface of the growth, where the outer layer of cells, if not absolutely necrotic, would be devoid of any grafting vitality. In supposed transfer from breast to arm it was surprising how extensive the lymphatic dissemination was in a brawny arm; he had demonstrated on several occasions cancer cells in the lymphatics as far down as the wrist, but without any evidence of nodule formation in the skin. With regard to the lips, if the possibility of lymphatic involvement from one side to the other could be excluded, as it could not always, it might be accepted that the causal factor which induced the original growth—for example, the irritation of a clay pipe—could start a growth on the other lip, which was equally exposed. In the vagina, lymphatic spread from the cervix could often be demonstrated, but he would suggest that occasionally, apart from this, the vagina involvement might be an independent thing. The fact that vagina involvement was so rarely visible to the naked eye in early cases might be held to favour the idea that its late development was due to some prolonged operation of the same cause as produced the cervical cancer.

In making microscopic examinations Dr. Archibald Leitch said he had come across appearances in the vagina which led him to believe that independent growths might be in process of formation. It was not uncommon to observe localized hyperplasias of the vaginal epithelium, especially with keratin formation on the surface, which was certainly very abnormal. In a few cases he found, quite by accident, some advanced and suspicious changes. He did not think much about these until he began to produce cancer experimentally in mice, when the former observations assumed a new importance. In these experiments coal tar was painted on the backs of mice periodically, and after some months little neoplasms developed, and in time became true infiltrating epitheliomata. The curious thing was that over the painted area these tumours only arose at certain points; there was not a uniform reaction over the exposed surface. Thus at one place there would be an epithelioma, and at another a cornifying wart, while portions of the area had escaped entirely.

The irritation theory of cancer was now assuming much importance. There was, perhaps, an undue inclination to look upon cancer as something for which an irritative cause had invariably to be found. But one naturally sought to draw a relationship between appearances found where there was a known causal agent and those found where the causal agent was not known. He showed sections of the vaginal mucosa in two cases of cancer of the cervix. In one there was evidence of deep lymphatic spread, but apart from that, and at a lower level, there was an epithelial growth of a basal-cell type, such as was found in rodent ulcer, arising in the vaginal mucosa. The other case showed a minute growth starting from the surface and penetrating irregularly into the deeper tissues. He would diagnose it as an early epithelioma; and in this case there was no deep lymphatic involvement. He suggested that this was an independent growth, due to the same cause which produced the cancer of the cervix. The same irritant, probably a diffusible one, that produced the cancer of the cervix might also produce the cancer of the vagina, quite apart from lymphatic spread.

Dr. A. E. GILES said that one other instance of apparent contact carcinoma was the presence of the disease in each labium. Here there were surfaces which exactly touched, but he would not argue that this proved transference by contact. He believed that there was a good deal to support Dr. Leitch's view. One might find carcinoma of the vagina, if not associated with, at any rate following carcinoma of the body of the uterus, where any direct extension would seem to be out of the question, and lymphatic spread a little more difficult.

Dr. FLETCHER SHAW said that a patient upon whom a hysterectomy had been done five years previously came to him with a small epithelioma in the vagina; its upper edge

was a quarter of an inch away from the original scar. It was quite irremovable, and radium was tried without result. The only explanation seemed to be a primary growth which occurred a second time in a patient susceptible to cancer. He imagined that the same primary irritation produced the second growth as produced the first.

Dr. A. LAPTHORN SMITH said that he had seen a few cases of cancer of the vagina present at the same time as cancer of the cervix, but he was astonished to hear that it was so frequent as Dr. Archibald Leitch's figures seemed to indicate. He himself had never imagined that there was any other explanation than contact.

Mr. EARDLEY HOLLAND related a case in which, after an extensive operation for carcinoma of the cervix, a completely isolated and discrete nodule of the carcinoma appeared at the extreme end of the vaginal wall, separated from the scar by two inches of healthy tissue. It might be an implantation, or perhaps due to backward lymphatic spread. In the majority of cases any recurrence after extensive abdominal operation took place, not in the vagina, but in the paravaginal cellular tissue.

Dr. CAMERON had seen several cases in which carcinomatous ulcers had been associated with, but were distinct from, a malignant growth of the cervix. He had always regarded them as being due to permeation formed by the breaking down of the cancerous nodule, but he had to fall back upon pathologists like Dr. Leitch for an authoritative interpretation. But he believed that such cases as Dr. Leitch had brought forward were rare, and that the majority of cases which spread did so by permeation, otherwise the results in radical operation would not be nearly so satisfactory as they were.

Mr. DOUGLAS DREW asked whether the explanation could be extended to cover the curious cases in which recurrences took place five or more years after the removal of the original growth. Dr. CLIFFORD WHITE instanced a case of sarcoma which involved the vagina in exactly the same way as had been stated in carcinoma. Another member had met with several cases of second primary growth in the breast, and saw no reason why, from the clinical point of view, second primaries should not occur in the vagina.

Dr. LEITCH, replying, said that the spread of sarcoma down the vagina would certainly be by lymphatic or venous routes. He believed that the great majority of recurrences in carcinoma, even when late, were by way of lymphatic spread, but in some cases such a thing as a second primary might occur. If he might speculate as to the nature of the irritant, he believed it to be diffusible, not localized, and possibly or probably a liquid, and he wondered whether it might not be traceable to some of the leucorrhoeas.

Chemical Observations on Pregnancy Toxaemias.

Dr. O. L. V. S. DE WESSELOW and Mr. J. M. WYATT read a paper on some chemical observations on the toxaemias of pregnancy, which recorded the results of a number of tests in twenty-one cases of albuminuria and six of eclampsia in the gynaecological wards of St. Thomas's Hospital, preceded by some similar observations on normal pregnancies. The chemical picture in normal pregnancy suggested an organism in a condition of comparatively low nitrogenous metabolism, owing probably to the fact that the increased demands for nitrogen were not met by a corresponding increase in protein diet among the class of people to whom the observations related. In the normal pregnant woman there was a rather low blood-urea content, slight but not very marked differences in nitrogen partition, and a very considerable increase in the fibrinogen content of the blood. In the albuminuric cases, as a whole, the blood urea was in excess of that seen in normal pregnancy, but the urea-concentration test showed a relatively lower figure. The observations directed to the functional state of the liver yielded no information of value, and it was chiefly in relation to renal function that such information was forthcoming.

Dr. HERBERT WILLIAMSON, who said that it appeared that a patient with a blood-urea content of above 0.2 per cent. must be regarded with suspicion, asked some questions of the authors, as did other members; and Dr. DE WESSELOW, in replying, said that in the normal pregnant woman one got the ordinary urea concentration found in the healthy young adult of corresponding age—between 3 and 4 per cent. He was afraid that the albumin had been neglected in these observations, but he felt that even if there was high-grade albuminuria, and the renal tests were satisfactory, it was not necessary to induce labour.

LABORATORY TESTS.

AT a meeting of the Manchester Pathological Society on March 15th, with the President, Mr. J. HOWSON RAY, in the chair, Mr. HOWARTH, lecturer on biochemistry in the department of pathology, read a paper and gave a demonstration on "The newer methods of pathological investigation." He demonstrated the methods of estimating blood sugar and blood urea, and also the estimation of urinary urea, chlorides, and phosphates, making references to the clinical application of the tests and their value in different conditions. This was followed by the diastase test and those for the body alkali reserve. Mr. Howarth drew a distinction between the salt-retaining and the protein-retaining types of nephritis, and showed how they differ on estimation of blood and urinary urea and urinary salts.

Dr. G. J. LANGLEY followed with a discussion on the value to the practising physician of these laboratory tests. The speaker had found the urea-concentration tests of great value, and in cases of chronic nephritis intractable to medical measures was attempting to find in these and other urinary tests some standards which would indicate decapsulation. He referred to a case of renal glycosuria in which the blood-sugar test had enabled him to make a correct diagnosis.

Dr. OLIVER stressed the value of the various urinary tests, and commented on their use in helping to elucidate the very confused pathology of nephritis. He supported Mr. Howarth's remarks on the paramount importance of blood-sugar estimations in diabetes, and pointed out that the disappearance of sugar from the urine of diabetics did not constitute cure, as these sufferers had still a high blood-sugar figure. He had found the constant checking of the blood sugar an invaluable aid in the dieting and general treatment of diabetics.

Dr. J. B. MACALPINE restricted his remarks to the estimation of blood and urinary urea in urinary surgery. He had found the tests of the greatest possible value, and would not like to return to the old days when one operated on these cases largely in the dark as to their renal function. The chief field for these estimations lay in the ordinary prostatic enlargement. The speaker never operated upon these cases until he knew the functional condition of the kidney, and had had excellent results from this procedure. Although no test as yet will tell how much the precise anatomical damage is, he thought the blood-urea test the most valuable in general. The crude dye excretion methods, quantitatively estimated by the cystoscope, he thought fallacious.

Dr. DIBLE thought Ambard's constant a useful criterion, and believed that people were alienated from it by its formidable-looking formula. The PRESIDENT, in congratulating Mr. Howarth on his demonstration, called attention to the fact that Mr. Howarth would be glad to receive material for investigation from all who cared to sent it to the Department of Pathology.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

THE production of the *Transactions* of the Royal Academy of Medicine in Ireland has suffered serious delay by the burning of the press in Dublin which printed them.

Obstetrical Shock.

A meeting of the Obstetrical Section of the Royal Academy of Medicine was held on December 2nd, 1921, when Dr. HASTINGS TWEEDY read a paper on obstetrical shock. He said that Dale and other workers had conclusively proved that a poison generated in bruised muscle was a potent factor in obstetrical shock. Other protein material could generate this poison, and obstetricians had every opportunity of observing that it could arise in freshly effused blood. Ruptured tubal pregnancy, concealed accidental haemorrhage, and haematoma of the vulva all supplied evidence of this fact. Liquid blood was more poisonous than that which was clotted, and thus haematocele could be accounted for. If the woman survived the initial toxic dose the blood would have time to clot. Shock was associated with a general elongation of all muscle fibres. The pupils, the anus, the bladder, the intestines, and the cheeks demonstrated this. The veins, and at a later stage the arteries, seemed to be also affected. Indeed, a great dilatation in the capillaries and veins might account for the phenomena of shock. In the uterus this elongation was better demonstrated than in any other organ, and the condition was evidently one of "retraction reversed." Contraction—a temporary shortening of muscle fibre—was under the control of the nervous system;

retraction was a property inherent to the muscle itself; it took place in a flabby, inert muscle, and was the chief factor in preventing haemorrhage. The process was slowly reversed during the growth of a pregnant uterus and rapidly reversed in shock. Accidental haemorrhage was of toxic origin; if the blood did not quickly escape its products caused shock, which led to dilatation of the uterus. The condition was therefore not due to a diseased atonic uterus, and the fallacy of hysterectomy for its relief was apparent. Caesarean section, with a smaller mortality, was more effective in the control of haemorrhage. Uterine inertia was no contraindication for delivery by forceps, for inertia was no bar to retraction. It was shock and not inertia that was to be dreaded. Lastly, the "retraction reversed" fibre was quite capable of contraction, and this was probably the condition found in the arteries during the early stages of shock.

Sir WILLIAM SMYLY said that the views propounded in Dr. Tweedy's paper would require much thought and research before one could either accept or reject them. If shock was the result of toxins in the effused blood they must develop with extraordinary rapidity and disappear almost as quickly.

Dr. SOLOMONS found difficulty in discussing the theories brought forward without more thought. While accidental haemorrhage, as suggested by Dr. Tweedy, might always be due either to toxaemia or indirect violence, he wished to know why toxaemia should be diagnosed when albumin was absent from the urine, and there were no other toxaemic signs present. He believed with some of the previous speakers that the cause of shock could not be laid at the door of any one factor; there were many such factors. He hoped that the subject would be more fully developed, and that the reason for the relief of shock by various drugs, especially morphine, would be explained.

Supports of the Uterus.

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Academy of Medicine on January 20th Dr. L. CASSIDY read a paper on the supports of the uterus. He said that a careful consideration of the anatomical facts led to the conclusion that no one single structure could be regarded as of prime importance for retaining the uterus in position. Every structure which connected the uterus to the bony pelvic wall must help to fix the uterus in the pelvis, but it was only by the harmonious working of all the factors concerned that this result was obtained. The principal difficulties the uterus had to contend with were (1) intra-abdominal pressure and (2) structural injuries to the supports sustained during childbirth. With reference to the first it might be said that ordinary intra-abdominal pressure played no part at all in bringing about uterine displacement; it was only increased intra-abdominal pressure acting over a prolonged period that tended to cause this condition. The structural injuries sustained during childbirth comprised not only injuries of the pelvic floor, but also those sustained by the more important fascial structures which were present in the base of the broad ligaments.

Prognosis in Mental Disease.

A meeting of the Medical Section of the Royal Academy of Medicine was held on March 3rd, when Dr. H. R. C. RUTHERFORD read a paper on prognosis in mental disease. For purposes of comparison he made a classification of states instead of entities. He divided them into four types: depression, excitement, confusion, and delusional. An analysis had been made of 157 recoveries. A depression state was present in 63 cases. The general recovery rate, as estimated upon the admissions, had worked out at 43.13 per cent. Permanence of recovery was not to be found, as a rule, in mental disease, owing to the influence of heredity. Heredity was usually to be discerned in from 50 to 70 per cent. of admissions. This heredity he regarded as being purely of a hypothyroidal nature. He had come to this belief by the large number of patients, with an early psychopathic inheritance, who responded to thyroid treatment. Especially was this to be noticed in cases showing a family history of collateral heredity. The later hypothyroidal generations showed dementia praecox and imbecility, which conditions were accompanied by degenerative changes, or undevelopment, and these the late administration of thyroid could not remove. He commented upon the influence of thyroid in the organism's growth, and suggested that the want of durability in degenerated tissues was due to deficient thyroid, so that when strain came the affected organ failed. Hypothyroidism only acted as a predisposing cause, but whenever the exciting cause of the mental attack was a feeble one the administration of thyroid would remove it. There was a marked association in both the insane and their relatives of tuberculosis, asthma, and malignant disease. The author suggested that defective thyroidal secretions might act as an hereditary and predisposing cause in these diseases also.

The Treatment of Acute Infections.

Dr. W. M. CROFTON read a paper on the treatment of active immunization of acute infections, illustrated by lantern slides of the charts of patients. He discussed the theory of this method of treatment, suggesting it was always possible, so long as the endothelial cells of the blood vessels were intact. The cases described comprised acute broncho-pneumonia, empyema of the knee-joint, acute thoracic infection after gunshot wounds, septicaemias following gunshot wounds of the limbs, puerperal fever, and acute pneumonic phthisis. The surgical cases had, of course, received the appropriate surgical treatment. These cases were chosen as illustrations because the patients were all quite obviously in imminent danger of losing their lives—they all had made complete recoveries.

Dr. T. P. C. KIRKPATRICK said he had seen many of the cases, and he could testify that the results were as satisfactory as had been stated. There was always difficulty in judging the relationship of cause and effect, but he felt justified in saying that the patients were distinctly benefited, and that certainly there were no harmful results. The patients themselves appreciated it. He thought that acute or advanced forms of tuberculosis did not seem to react in the same satisfactory fashion as other forms of infection.

Reviews.

ELECTROTHERAPY AND ITS APPLICATIONS.

THE *Principles of Electrotherapy and their Practical Application*,[1] by Dr. TURRELL, Electrotherapeutic Physician to the Radcliffe Infirmary, Oxford, is, as he states in the preface, an attempt to explain the therapeutic action of electricity upon rational grounds and upon physiological principles. In its main construction it consists of four parts. The first deals with the therapeutic action of current electricity, and includes chapters upon the constant current, the interrupted currents of low frequency and of high frequency, and currents derived from the static machine. In each chapter the apparatus is described, experimental work bearing upon the subject is both quoted and illustrated, the author's own experience is largely drawn upon, and an attempt is made to work out the exact reasons why the current acts on various tissues and so brings about definite results. The chapter on the influence machine and static electricity is especially good, and contains valuable information respecting the use of the various types of machines at present available.

The second division of the book deals with the therapeutic action of radiant energy; it contains three chapters on radiant heat and light, on ultra-violet radiations, and on x rays respectively. In discussing the therapeutic action of x rays, the author takes the view that their action is simply an intensified form of the action of ultra-violet radiations, and asserts that this is in accordance with the now accepted fact that the ionization produced by x rays is due entirely to the electronic discharge or beta radiation, and not in any way to the action of scattered or secondary radiation.

In the third part, which deals with the electro-diagnosis of peripheral nerve lesions and of nervous and other diseases, the practice of allowing nurses or masseuses to take electrical reactions is strongly condemned.

In the fourth and concluding part the general lines of electrical treatment for various conditions are discussed in a series of chapters. In that on the genito-urinary system the Erlangen treatment for uterine fibroids, for sterilization, and for the cure of cancer is described, and its advantages and disadvantages contrasted. There is also in the chapter on the therapeutic action of x rays a description of the Wintz boiling-water tube, and a discussion of the reasons for the special technique. It is evident that Dr. Turrell looks upon

[1] *The Principles of Electrotherapy and their Practical Application.* By W. J. Turrell, M.A., M.D., B.Ch.Oxon., D.M.R. and E.Cantab. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. ix+276; 29 figures. 12s. 6d. net.)

this new method as a great advance—in fact he suggests that it is likely to revolutionize to a very large extent our views on radiotherapy; as he points out, it is largely in the direction of the attempt to place dosage on a more exact and scientific basis that the advance has been made. In discussing the dosage much stress is laid upon the lethal as opposed to the stimulating dose, and the author expresses the opinion that if 40 per cent. of the unit skin dose, as Drs. Seitz and Wintz state, has the effect of stimulating rather than destroying cancer cells, the present practice of employing prophylactic radiations before operation, and also post-operative radiation, should be immediately discontinued; this for the reason that as at present carried out in this country treatment given for these purposes does not usually exceed 40 per cent. However, the "if" with which this sentence commences is an important item in the discussion; another important point is that recurrent nodules in and around a scar after a breast has been removed for cancer are often seen to disappear completely under doses of *x* rays which cannot even approximate to the lethal dose of Wintz, but must be well under his 40 per cent. In this case, then, we appear to be faced with the fact that under certain conditions cancer cells are destroyed by a dose of *x* rays which according to Wintz is certainly not lethal but stimulating.

We have nothing but praise for Dr. Turrell's volume. It has been composed on original lines and is full of suggestive ideas. He is to be congratulated on having written a book which, whilst full of interest to every practitioner of medicine, is calculated to place electrotherapy on a more scientific basis, and to be of great assistance to all those making a speciality of this subject.

PSYCHO-ANALYSIS.

IN the preface Dr. STEKEL describes his volume, *The Depths of the Soul*,[2] as his favourite production. The book consists of a series of short essays or sketches dealing with a variety of topics of human interest, written at a time when the author had gained his early impressions of the psycho-analytic movement, and when, as he writes, he was experiencing "the exuberant joy of a discoverer." Though these essays reveal a knowledge of psycho-analysis, they are free from technical phrases, and might almost have been written by any wise physician of keen observation and sympathetic insight into the minds of the mentally sick and troubled. Dr. Stekel is a psycho-pathologist of repute, but these studies reveal him as an artist and poet as well. There is a subdued note of melancholy and regret in this volume which seems to reflect the mood of a physician who is sensitive to the pain of those who consult him day by day. The book makes no great demands on the reader, and may be recommended as a form of recreation to a busy doctor at the end of a hard day's work. *The Beloved Ego*,[3] written by the same author, also consists of a number of sketches of different aspects of human life, and the above comments are equally applicable to this volume. The book concludes with a number of witty, and sometimes cynical, aphorisms.

The Critic and Guide Co., New York, which publishes literature concerned with sexual hygiene, has included in the series a volume by Dr. STEKEL, entitled *Twelve Essays on Sex and Psycho-analysis*.[4] The book, it is stated, is sold only to members of the professions and to special students of sexology. The first chapter deals with sexual abstinence and health. The writer expresses his views with considerable frankness, and the tone of the essay is insufficiently restrained and dignified to render it a significant contribution towards the solution of the difficult social problem with which it deals.

We have also received four very large volumes,[5] by Dr. STEKEL, in the original German; in them he deals at enormous length with various problems concerning sex and sexual aberrations. They may be of interest to the specialist in the subjects with which they deal.

[2] *The Depths of the Soul.* Psycho-analytical Studies. By Wilhelm Stekel, M.D. Translation by Dr. S. A. Tannenbaum. London: Kegan Paul, Trench, Trübner, and Co., Ltd. 1921. (Cr. 8vo, pp. 216. 6s. 6d. net.)

[3] *The Beloved Ego.* Foundations of the New Study of the Psyche. By Wilhelm Stekel, M.D. Translated by Rosalie Cabler. London: Kegan Paul, Trench, Trübner, and Co. (Cr. 8vo, pp. 238. 6s. 6d. net.)

[4] *Twelve Essays on Sex and Psycho-analysis.* By William Stekel, M.D. Translated by Dr. S. A. Tannenbaum. New York: The Critic and Guide Co. 1922. (Post 8vo, pp. 320. 3.00 dols.)

[5] *Nervöse Angstzustände.* (Pp. 672.) *Onanie und Homosexualität.* (Pp. 526.) *Die Geschlechtskälte der Frau.* (Pp. 402.). *Die Impotenz des Mannes.* (Pp. 484.) All by Dr. W. Stekel, (Berlin and Vienna: Urban und Schwarzenberg.)

PARASITOLOGY FOR PROBATIONERS.

Elementary Parasitology,[6] by Mr. THOMAS T. O'FARRELL, is written for first-year nurses. It deals only with those parasites which are likely to be seen in the wards of an ordinary general hospital in Great Britain, including those which are commonly brought into the country from abroad. Attention in the first year of the nurse's training is to be focused more upon the animal than the vegetable parasites, because so many of the animals can be seen with the naked eye.

The probationers in general hospitals are hard-worked, but so much has been omitted from the book in the endeavour to shorten their studies that it has become a little difficult to understand. The choice of types for study is good, and we would not add to it; but more attention should be paid to the life-histories of the pests, both because the biology of even the most unseemly parasite is often a thing of rare beauty and interest, and also because some knowledge of the natural history is generally the only means of destroying it. One or two minor errors require correction. The ascaris is not a cousin of the earthworm, not even a distant cousin; the anopheles does not breed at the *bottoms* of ponds; and it is surely rather a serious omission that no reference is made to the louse as the carrier of relapsing fever. The figures are not as good as the rest of the book, and the probationer would glean little from them. We call attention to these points because we believe the conception of the book to be valuable, and that there will be a demand for its translation into certain oriental languages. If it is a little too elementary for some nurses it is just the thing for dressers and tamurgies, and the various types of male ward worker found in India and Egypt and China. But if it is to be used for this purpose it is essential to illustrate it with large, clear line drawings.

PROGRESSIVE LENTICULAR DEGENERATION.

DR. HALL'S monograph, entitled *La Dégénérescence Hépato-lenticulaire*,[7] is a well-founded attempt to localize the cerebral degeneration underlying the signs and symptoms observed in the rare nervous disorder described by Dr. S. A. K. Wilson in 1912 under the name "progressive lenticular degeneration." As Professor PIERRE MARIE points out in his appreciative preface, neurologists tend to localize nervous disorders in the basal ganglia nowadays, just as forty years ago the localizations attempted were mainly cortical. Dr. Hall adds two further types to Wilson's original: these are Westphal and Strümpell's pseudo-sclerosis, and the disease described by Thomalla and by Wimmer and Neel. He provides the reader with a full discussion of sixty-eight cases in all, and at the end of his volume summarizes the conclusions to which he is led, amplifying and amending in some respects the views expressed by Wilson. The book is well written and temperately argued; it is one for the neurological specialist.

CANCER OF THE LARYNX.

THE late Mr. C. B. Lockwood used to say: "Don't read textbooks, read monographs; textbooks are made to sell." It may be hoped, however, that Dr. IRWIN MOORE'S monograph on *Intrinsic Cancer of the Larynx*[8] will "sell" as well as any textbook, for by his insistence upon the paramount importance of early diagnosis in cancer of the larynx much of what he has to say is of as great importance to the general practitioner—upon whom the duty of early diagnosis of all diseases must primarily fall—as to the laryngological surgeon. That part of the book devoted to operative technique does not, of course, concern the general practitioner or the general surgeon, for the operation is certainly not one to be undertaken lightly; but, in spite of the comparative rarity of the condition, too much stress cannot be laid upon the part devoted to diagnosis. Dr. Moore quotes a leading authority who, in referring to twenty-three cases of cancer of the larynx which he had seen, states that only one was in its early stage, which is rather a terrible commentary on the present conditions of the diagnosis of this disease. This authority suggests that "the fault lies largely

[6] *Elementary Parasitology* (First Year). By Thomas T. O'Farrell, F.R.C.S.I., D.P.H. Dublin: Fanning and Co., Ltd. 1921. (Cr. 8vo, pp. 32; 2 illustrations. 1s. net; 1s. 6d. interleaved.)

[7] *La Dégénérescence Hépato-lenticulaire: Maladie de Wilson—Pseudo-Sclérose.* By H. C. Hall; preface by Professor P. Marie. Paris: Masson et Cie. 1921. (Med. 8vo, pp. xi + 361; 45 figures. Fr. 20 net.)

[8] *Intrinsic Cancer of the Larynx and the Operation of Laryngo-Fissure.* By Irwin Moore, M.B., C.M.Edin. London: University of London Press. 1921. (Roy. 8vo, pp. 159; 46 figures. 20s. net.)

with the general practitioner, who does not take sufficient notice of the early symptoms." According to the mortality returns of this country the average number of deaths from cancer of the larynx for the five years 1911–15 was 534; of every 100 deaths from cancer 1.8 are from cancer of the larynx, while 21 are from cancer of the stomach. Since the chief and characteristic symptom of the disease, in its early stage, is alteration in the voice or persistent hoarseness it is evident that a warning so definite is of infinite value in the early diagnosis of the disease, and Dr. Moore's plea for more frequent co-operation between the general practitioner and the laryngologist is completely justified.

The greater part of the book is occupied by a detailed description, fully illustrated, of the operation of laryngofissure, which has given satisfactory results in the treatment of early cases of intrinsic cancer of the larynx, both as regards life and as regards the voice. The fault of the monograph is that, while the opinions of all available authorities are quoted at every point, hardly enough stress is usually laid by the author upon his personal views. It is, however, fair to say that no throat surgeon should attempt the operation of laryngo-fissure without having made himself familiar with the contents of this volume, especially as the immediate success of the operation depends greatly upon the attention devoted to details which are fully set forth here. The index, it may be added, is quite unusually comprehensive and accurate.

Dr. Irwin Moore's monograph reflects credit upon British laryngology. It is evidence not only of patient and untiring industry, but of an alert and discriminating mind.

TYPICAL FLIES.

THE diptera, or two-winged flies, are of very great importance to the human race: the mosquito, the tsetse, and the flea inoculate us with the germs of fatal diseases; the fly is a major cause of all the intestinal diseases in nearly every part of the globe; other diptera adversely affect our welfare by attacking our horses and our cattle and our sheep. There is no group of insects of greater importance to us, and probably none which gives greater difficulty to anyone desirous of referring his specimens to their approximate position in classification. This difficulty is found not only by the tropical practitioner or the agricultural officer, but, to some extent at any rate, by those entomologists who have not made a special study of the diptera; an approximate identification is often a very valuable thing in tropical countries, as it frequently gives the key to the destruction of a pest without having to wait until a report is received from Europe. The principal difficulty is due to the fact that an enlarged drawing of a fly, even from the pencil of an expert, often fails to convey the same general impression as the specimen under examination; this is more true of flies than of any other group of insects. In these circumstances we extend a hearty welcome to the appearance of the second series of Mr. E. K. PEARCE'S *Typical Flies*.[9] It is probable that his very carefully executed photographs will succeed exactly where the artist fails. It is, of course, essential that the study of these plates should be accompanied by a very careful anatomical examination of the specimen, and by reference to some work dealing with the details of classification. This is of great importance, and if care is not taken specimens will be referred to entirely wrong families because they happen to have a superficial resemblance to some insect figured in Mr. Pearce's plates. It is perhaps to be regretted that the author has not been a little more systematic in his arrangement; several quite important families of flies are not illustrated in either series—the Sepsidae and Agromyzidae among others; other families are illustrated in both series, but there is no reference on the plate in the second series to the illustration of the other fly illustrated in the first series; and, lastly, there is nothing on the plates themselves to tell the student to what family the species therein illustrated refer.

Our conclusion is that we admire Mr. Pearce's photographs very much, and we believe that they serve a very useful purpose; but we should prefer to see them combined with a fuller letterpress dealing with the classification of the diptera and with an abundance of clear drawings to illustrate details of chaetotaxy and neuration.

[9] *Typical Flies: A Photographic Atlas.* By E. K. Pearce. Second Series. Cambridge: The University Press. 1921. (Sup. roy. 8vo, pp. xiv + 38; 125 figures. 15s. net.)

NOTES ON BOOKS.

THE earlier editions of the very practical little book, *Experimental Physiology*,[10] by Professor Sir EDWARD SHARPEY SCHAFER, have been so well known to several generations of students since the first edition appeared nearly ten years ago that it is not necessary to do more than announce the appearance of a third edition. The text has been revised and the number of illustrations slightly increased. A certain number of the experiments described are intended for advanced students, but the selection of these is left to the teacher, since it must be regulated by the requirements of his students and the nature of the examinations for which they are working.

Dr. GIRINDRASHEKHAR BOSE, who is lecturer on psycho-analysis and abnormal psychology in the University of Calcutta, has written a small volume based upon Freud's teachings, entitled *Concept of Repression*.[11] The author explains in the preface that he has developed his theories from a relatively slight acquaintance with psycho-analytic literature, and that the views he presents, though much compressed and lacking references to actual cases, are the product of experience derived from clinical study during a number of years. Dr. Bose explains his concepts by the use of diagrams, and makes free use of analogies from the physical sphere. He relies very largely on the theory of the opposite wish for explaining the process of repression.

In his lectures on *Psycho-Analysis in the Service of Education*,[12] now translated into English, Dr. OSKAR PFISTER, writing as pastor, teacher, and practising psycho-analyst, strongly urges the importance of psycho-analysis for the education of the young. As a religious instructor he lays particular emphasis upon what he believes to be the moral and spiritual value of this form of treatment. He considers that teachers should themselves be analysed, and that they should receive a course of instruction in the theory and practice of psycho-analysis in order that they may be in a position to apply this procedure to the children entrusted to their care. Though Dr. Pfister writes with fervour his views will probably not commend themselves to the majority of educationists, medical men, psychologists, or parents. It would seem to be most undesirable that teachers should regard it as part of their function to practise psycho-analysis upon their pupils.

The German book on headache, by Dr. LOBEDANK,[13] is stated to be a second edition. It contains tables designed to assist in the diagnosis of the headaches respectively due to the seventeen causes the author considers most important. His pages are full of information, but appear to be of theoretical rather than practical interest.

We have received from the dental manufacturing firm, Claudius Ash, Sons, and Co., a centenary memoir commemorating the firm's hundredth year. It takes the form of a history of the firm's origin and growth entitled *A Century of Dental Art*,[14] and is practically a record of the development of the art of dentistry during the last hundred years. Many points in this record are of interest to the medical practitioner. A sympathetic echo is awakened on reading how, one hundred years ago, the dentist was dependent on the gravedigger and the body-snatcher for his supply of teeth for dentures, and a feeling almost of jealousy on learning that the first operation under ether in this country was the extraction of a lower molar! The tale of the fight for the introduction of amalgam fillings and vulcanized rubber plates evokes more modest emotions, for the medical profession feared mercurial poisoning—and there was none! The memoir is well illustrated and tastefully got up. We congratulate the firm on their useful work.

[10] *Experimental Physiology.* By Sir Edward Sharpey Schafer, F.R.S., Professor of Physiology in Edinburgh University. Third edition. 1921. London: Longmans, Green, and Co. (Demy 8vo, pp. viii + 131; 90 figures. 6s. net.)

[11] *Concept of Repression.* By Girindrashekhar Bose, D.Sc., M.B.Cal. Calcutta: G. Bose. 1921. (Post 8vo, pp. viii + 223; 18 figures.)

[12] *Psycho-Analysis in the Service of Education.* By Dr. Oskar Pfister, Pastor and Seminary Teacher at Zurich. Authorized translation. London: Henry Kimpton. 1922. (Cr. 8vo, pp. xii + 176. 6s. net.)

[13] *Kurze praktische Anleitung zur Erkennung aller Formen des Kopfschmerzes.* Von Generaloberarzt A.D. Dr. Lobedank. Zweite, verbesserte Auflage. Leipzig: C. Kabitzsch. 1921. (Cr. 8vo, pp. 71. M.8.50.)

[14] *A Century of Dental Art.* London: Claudius Ash, Sons, and Co., Ltd. 1921. (Double demy 8vo, pp. 64; illustrated.)

THE Public Health Department of the New York Academy of Medicine has published a statement that the experimental prophylactic inoculations against pneumonia carried out during the period of the war, and subsequently, have so far not yielded sufficiently convincing proof of the efficacy of the method to warrant its universal application.

THE HOSPITAL PROBLEM.

ADDRESS BY SIR JAMES GALLOWAY.

IN an address to the annual meeting of the Hospital Saturday Fund, held at the Mansion House, London, on April 8th, Sir JAMES GALLOWAY, K.B.E., M.D., began by remarking that the delegates of the various committees of the association and the medical staffs of the London hospitals—their executive officers, so to speak—were partners in the enterprise of organizing our great hospitals on a voluntary system, which was one of the most noble achievements of individual and voluntary effort in this country.

A Retrospect of War Hospitals.

Sir JAMES GALLOWAY said that he had vivid recollections of the address given by him at the annual meeting of the Fund in 1915. The war had then passed its first stage, and a system of defensive warfare was being established. The country had just awakened to the great task which absorbed its full energies during the subsequent four years. The demands of war had already placed a great strain on existing medical resources, with the result that our hospital organization, both military and civilian, was in a state of rapid change and development. The military hospitals of the small regular army were expanding out of recognition to render the necessary services to our rapidly increasing armies overseas. Two main factors determined the form taken in this process of development: First, the establishment in the greater part of our fighting front of trench warfare with its peculiar character; secondly, the rapidly growing power of mobility in transport behind this stationary front. The development of transport by road, by ambulance trains, and ambulance ships became so perfect that it was possible to transport the sick and wounded from the French front to London in forty-eight hours. As the result of these conditions many hospitals immediately behind the fighting line, originally arranged as mobile hospitals and equipped for rapid movement with troops, developed as stationary hospitals, occupying the same site for years. Hospitals of this type were at that time in process of development, but it was not then known how extensive and how important these advanced hospitals were to become. These hospitals, having some security of tenure, developed equipment and facilities of medical treatment never before afforded so near the actual field of battle. They became so complete as to allow of treatment of all urgent cases under exceedingly favourable conditions, even within four or five miles of the trenches. To these hospitals were posted young and energetic medical officers. They came from all the schools of medicine in these realms and from the dominions and empire overseas, and even at the earliest stage of the war from the United States of America. These officers were confronted with new problems in the investigation and treatment of disease. Their enthusiasm and industry were so great that they made their hospitals not only of the greatest use to the army in the treatment of the sick and wounded, but centres of medical activity which influenced all those who came in contact with them. The work of every man was placed at the common disposal; the good ideas and the good plans survived. Similar conditions prevailed in the hospitals on the lines of communication and at the great base hospitals. The influence of war conditions stimulated thought and work so that these hospitals became centres of medical research from which new knowledge radiated throughout the whole medical profession.

Our hospitals at home were not slow in responding to these quickening influences. In a short time a very noticeable increase in alertness and in the practical application of medical knowledge in the treatment of disease was felt throughout the country, from our great voluntary and war hospitals to the remote cottage hospitals in the country. The profession of healing in all its branches had now more knowledge at its disposal and was more useful to the community in the application of that knowledge than at any other time, and this result was largely due to the stimulating mental influences of the Great War.

So it was also in the case of hospital organization. Large numbers of people became interested in the establishment and in the equipment of hospitals during the war. Any who had the opportunity of travelling through the country during the war time, especially in its later years, must have been struck by the changed aspect of the country. On a bright summer's day the well-known outlines of our landscapes, which gave so much pleasure to look upon, remained; the details were altered on every side by great military encampments. But one of the most interesting features, giving cause for serious thought, was the frequent appearance of the Red Cross of the Geneva Convention. Every town, every hamlet displayed the Red Cross in some prominent position, and in many out-of-the-way corners the flag would meet the eye. In the large cities sections of the great hospitals had been given over to the use of our sailors and soldiers, while both the navy and the army had established many large war hospitals. The increase of our hospital accommodation was enormous. The amount of money expended by the nation and by private generosity seemed to know no limit. New accommodation, new equipment materialized almost when wished for. All this development greatly stimulated the interest of our people in hospital work. To the trained hospital administrator it gave unexampled opportunities of testing plans of hospital administration, of noting the points at which they failed, and of concentrating on what seemed to be the best methods. In this way, just as in the case of the medical workers, the organizers of hospitals received an intensive and excellent training during the war, and at the end of the war the country had at its disposal a larger number of persons well trained in the organization and administration of hospitals than had ever been the case before.

The After-War Reaction.

Very soon after the armistice the reaction began to appear; private generosity had long shown signs of diminishing. Many hospitals had come to depend largely, not in the old way on the gifts of individuals, but on grants from the great funds of the societies of the Red Cross and the Hospital of St. John and on payments from Government sources. These also showed signs of restriction. The demands on our great hospitals increased as the smaller hospitals closed. The peace brought the claims for hospital treatment from large numbers of sick previously under the care of various State authorities. The great epidemics of infectious disease which characterized the closing year of the war and the first year of peace strained the accommodation and financial resources of our hospitals to the utmost. No sooner had these plagues diminished than the depression in commerce and industry rapidly developed with great increase in the cost of all commodities. The necessary expenditure of hospitals doubled and more than doubled in the years following 1918. For all these reasons the hospitals of the country were now passing through the most serious financial strain ever known; some even had to close their doors; others were just beginning to revive from the strain they had passed through.

The contrast therefore was striking. At a period when their medical efficiency was at its highest and their administration by both lay and medical workers most effective, the institutions themselves had been brought within sight of ruin. But to the audience Sir James Galloway addressed he was sure that the response could only come in one sense—namely, that notwithstanding the present difficult and even perilous position of our hospitals, the voluntary system of support must go on intact and undiminished.

The Changing Hospital Clientèle.

Another aspect of the position of our voluntary hospitals arose from the circumstance that these hospitals were now giving free service to a much larger proportion and to very different classes of the population than they had been accustomed to do in the past. This great change was due to the fact that appropriate and adequate medical treatment was more difficult to obtain and its cost had greatly increased. Until comparatively recently a doctor was able to arrange for and to give the necessary treatment to the majority of those who consulted him. In some cases he required assistance, while in others the special opinion of a trained consultant or the operative skill of a practised surgeon was necessary; but with such exceptions the doctor in charge would proceed to carry out treatment on his own responsibility. Owing to the rapid advance of medical research and knowledge greatly stimulated by the war, this was no longer the case. Often the doctor in charge was unable to form a satisfactory opinion as to the exact nature of the malady or to arrange for appropriate treatment without a considerable amount of preliminary investigation. Such investigation required special skill and much practice to render it of real service. The doctor in charge usually had neither the

time nor the equipment to carry out these investigations. They might require a special knowledge of chemical and physical science beyond the ordinary medical experience. Such investigations were now carried out by medical men with special training and skill. When this information had been obtained and collated the doctor in charge was in a position to form an opinion of much greater value to his patient and to arrange for the most effective treatment. In other cases the help of a skilled operator might become necessary. Thus the work of several doctors was often needed before the most suitable treatment was determined and could be carried out. The system of combined work not only increased the financial cost but required care and trouble to co-ordinate. Thus the cost of adequate and proper medical treatment to large numbers of persons, even to those in comfortable circumstances, was so great as to be almost prohibitive. In the case of medical treatment involving the cure of sickness and the lives of the people this must not be permitted: the sick must have the full advantage of the best medical knowledge. The hospitals had this knowledge and medical experience in their gift. In the process of years of growth a system had developed whereby both the personal skill and the co-ordinated efforts of their medical officers were available in the most expeditious manner; these facilities were at the immediate disposal of the poorest and most needy in the land. Were those in better circumstances to be precluded from these benefits? Obviously this could not be. Hence the hospitals were no longer a haven for the necessitous poor alone, but were resorted to by many others with greater financial resources. It seemed therefore that our voluntary hospitals must make arrangements for serving at least three classes: First, the necessitous poor, not provided for by the State, and for whom adequate treatment could only be obtained at the voluntary hospitals. Secondly, the workers both by hand and brain who received an income sufficient for the needs of themselves and their families, but who had neither the facilities nor a sufficient financial margin to provide adequate medical treatment at home. Thirdly, those who might have a margin above that required for their daily necessities, but when faced with severe or difficult illness could not afford adequate medical treatment. And there were still others, even of ample means, who in serious illness might find that the only place where the appropriate and satisfactory treatment available was in a well-equipped modern hospital. All these persons could not be precluded from treatment; they must have the opportunity of securing restoration to health and of preserving their lives. The voluntary hospitals were therefore coming more and more into a position in which they must be prepared to serve persons drawn from many sections of the population, and the financial responsibility of these institutions was not likely to diminish.

Paying Patients.

One of the difficulties arising under these new conditions was that persons now admitted into general hospitals were able to pay in part or in whole for their maintenance, while others could pay the full cost of maintenance and also of treatment. Arrangements were urgently required to deal with this situation. To provide accommodation for paying patients seemed to be not only an urgent need but a desirable reform in the organization of hospitals. A method whereby hospitals, besides receiving those unable to pay, also arranged accommodation for patients able to pay part or the whole of their maintenance and the cost of their treatment, had been found useful and successful in many places throughout the empire and elsewhere. It appeared as though this change were in process of development at home also.

Such changes involved a reconsideration of the position occupied by the voluntary workers. In the case of those not only willing but anxious to pay the voluntary services hitherto given should clearly not be accepted. Financial readjustments would no doubt affect the medical services, the nursing services, and other services now afforded to the hospitals on a voluntary basis. These adjustments and rearrangements should not prove impossible nor unduly difficult if the underlying principles of voluntary organization and administration were insisted on and maintained. But when all this was done the outstanding feature of our voluntary hospitals would remain—namely, that the main reason for their existence was their services rendered as a free gift to the sick who could not afford adequate medical treatment; the sick and injured would still receive the best care and treatment possible by the good offices of their fellow citizens who would continue to lay aside from their hours of work, or from their earnings, or from their worldly goods, the assistance freely given to these voluntary institutions. Were this thoroughly understood, Sir James Galloway believed there was no fear that the generosity of our people would fail to support the hospitals.

The Voluntary Hospital Spirit.

It was important that the social customs of the voluntary hospitals should be emphasized. This atmosphere of comfort and friendliness was brought about not only by the work of the medical and nursing staffs, who in such hospitals must regard their patients as individuals rather than collections of sick folk, but also by the various activities of other voluntary workers. Friends from outside the hospital, guilds of lady helpers, others dealing with convalescent patients and after-care, played an important part; indeed the activities of these might be taken in some respects as an index of the general efficiency of a voluntary hospital. They helped to distinguish our voluntary hospitals from most of the State-supported hospitals, such as the infirmaries of the Poor Law, the municipal hospitals, or even hospitals under military administration.

The hospital was a large undertaking; to manage it efficiently requires business training and business ability. These requisites could be provided to a large extent by the hospital secretaries—an invaluable corps of national workers. But the best results in hospital administration were obtained by the continuous work of voluntary administrators, accustomed to the efficient management of large undertakings, associated with a capable executive—the secretary and his staff. Every means should be taken to encourage the non-medical workers, such as men in professions and in commerce, manufacturers, those accustomed to financial administration, and others dealing with the trade and work of the locality in which the hospital was situated. Those who were fit to do so should be invited to devote a part of their time to hospital administration. Much was heard at the present time of the dangers besetting the voluntary hospital system, such as the failure of funds, and their enlargement to admit contributing and paying patients. These difficulties were not so great as appeared, and they could be surmounted. The real danger which beset our hospitals was the risk of failure in attracting men with experience of affairs, in finance, and in the administration of large enterprises.

The amount of added financial assistance required was, after all, not very great; a comparatively small amount of help from all would relieve the urgent necessities of our hospitals and promote their efficiency. To conform to the voluntary system these gifts from all classes must be free and without restrictions. The whole spirit of voluntary support disappeared when the question of bargaining entered into the donation. If efforts were made that the donors might have preference or acquire special privileges, the essence of the free gift went, and the grace of the gift was lost. If the givers attempted to make bargains, the voluntary workers must necessarily do so. The dangers now arising in this way were very considerable. Some hospitals, on account of financial stringency, had recognized that many of those who sought their help were able to pay, at least to some extent, if asked for payment while under treatment. The urgency of the occasion might perhaps be held to excuse this departure from older practice. In some cases these gifts had gone far to make up the financial deficiency and to balance the hospital accounts; but it was a matter of common knowledge that difficulties had arisen. Some of those who paid, even in small amounts, thought they should receive preference above those who did not pay; while the very fact of payment brought to the surface the difficult underlying problem—namely, at what point in the case of those who paid could voluntary service no longer be offered. It could not be too strongly insisted upon that donations to voluntary hospitals, whether as personal gifts or in the form of massed contributions from groups of individuals, must still be free gifts in the full sense of the word. Any attempt to drive the hospitals into a position in which they undertook responsibility of the nature of insurance against illness for those who contributed would, in Sir James Galloway's opinion, not only be a disastrous financial undertaking on the part of the hospitals, but would bring about such a change in administration as to alter completely the voluntary system.

British Medical Journal.

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SUNLIGHT AND RICKETS.

IT is an old observation that rickets is much less prevalent in the countries of abundant sunshine. E. F. Neve in a communication to the JOURNAL (1919, vol. i, p. 518) stated that in the town of Srinagar, India, where extreme poverty and most insanitary conditions prevail, rickets is a rare disease; he attributed this to the fact that the sun shone strongly and for nine months in the year nearly all day; while it shines, whether in winter or summer, the poor work and sit about in the sunshine. H. S. Hutchison[1] has recently published an elaborate census of rickets in the town and district of Nasik, India; there rickets was not extremely rare, as among 3,378 children examined, signs of active or healed rickets were found in 381. But the special interest of his article lies in the fact that the population of Nasik falls into two sharply divided classes: a well-to-do class where, owing to the practice of the religious custom of purdah, the infants are strictly confined to the dark and stuffy houses, and a poorer class where the infants share with their parents the open-air life of the fields. In the former class the incidence of rickets was 24.9 per cent.; in the latter only 4.8 per cent. This contrast is all the more striking in that the diet of the poorer class compares unfavourably with that of the other in respect of fat and protein, though both are somewhat defective in fat-soluble A vitamin. In both classes the infants were breast-fed for at least one year. Hutchison therefore concludes that rickets is due to lack of fresh air, light, and exercise, and regards the analysis of this clinical material as a confirmation of the views of Noël Paton and Findlay that the predominant factor in the etiology of rickets is not dietetic but hygienic.

It is useful to place alongside this clinical study of rickets some recent experimental investigations in America by Powers, Park, and other workers.[2] Using rats, kept under ordinary laboratory conditions, they were always able to produce rickets with a diet defective only by reason of its lack of fat-soluble A and of phosphorus; not a trace of rickets appeared, however, if the animals were exposed for about four hours daily to the direct summer sunshine of New York. It is worth adding that where adequate phosphorus was added, and the diet was only defective by its lack of fat-soluble A, rickets did not develop in the shade of the laboratory; and that Hess and Unger,[3] in an investigation of about the same date, found that with such a diet and in complete darkness rickets did not develop. It was considered to be proved that direct sunlight was effective in preventing rickets in rats, and also in promoting the general health and vigour of the animals.

It is, however, not a fair inference from the clinical study of rachitic children in Nasik, or the rat experiments described, that lack of sunshine is the cause of rickets. For certainly in the laboratory experiment and possibly in the Indian babies, we have the factor of inadequate diet at work. Powers and Park do not make such a claim, but state that when for any reason, whether dietetic or hygienic, the general metabolism of the young growing animal is weakened, rickets will develop more readily in a dark and confined environment, and can be prevented by an environment of sunshine; that is as much as to say that sunshine is a powerful influence in the prevention and cure of rickets. Hess and Unger[4] have reported favourably upon the healing influence of direct sunshine upon babies suffering from rickets, and have confirmed their results by *x*-ray photographs of the epiphyses; they observed a similar improvement by the use of ultra-violet rays. In the last few years similar results have been obtained by Huldschensky and others. Hess and Unger believe therefore that many cases of rickets are due to defective hygiene rather than to dietary errors, though they admit that diet may be an etiological factor. They explain the much greater prevalence of rickets in winter in the Northern American States by the relative absence of sunlight; and the specially heavy incidence of rickets in the negro population by the failure of light rays to penetrate the thick pigment layer of the skin.

These clinical and experimental observations on sunlight and rickets seem to weigh in favour of the hygienic rather than the dietetic theory of rickets. But most recent writers are careful to reserve a place for the factor of inadequate diet. If we describe rickets as a disease of general metabolism, affecting all cellular tissues at a time when body growth is rapid, and revealing itself specially in a defective deposit of salts of phosphorus and calcium in the areas of active bone formation, it would seem that any substance or influence that will stimulate general metabolism will act towards prevention and cure of rickets. These antirachitic factors may differ widely in their character. Thus Mellanby has shown that lean meat has a definite though moderate antirachitic action in puppies, and attributes its action less to any content of vitamin than to its stimulant action upon general metabolism. There are good grounds, both experimental and clinical, for the belief that sunlight is strongly active in the same way, and there can be no doubt whatever of the antirachitic powers of cod-liver oil. The influence of light as a stimulant of all living cells is well known; and Powers and Park suggest that cod-liver oil may act in the same general way upon metabolism as a whole. The virtue of cod-liver oil cannot lie in its calorie value; and recent observations connect the action of cod-liver oil in an interesting way with the metabolism of phosphorus, the content of phosphorus in the blood plasma being found to be increased after the administration of cod-liver oil. That oil is known to be much richer in the vitamin fat-soluble A than milk or even butter, and though there are difficulties in the view that this vitamin and the antirachitic factor in the oil are identical, it seems probable that the value of cod-liver oil in rickets depends not upon its food value but upon some unknown property by which general metabolism is stimulated. It is an interesting thing that in the prevention and cure of rickets powerful healing agents so diverse as cod-liver oil and sunlight may exert their influence by a similar stimulus to general metabolism; and in the meantime it is safer to assume that in the causation of this defect of metabolism, the prejudicial factor may be dietetic in one case and in another hygienic.

It must be remembered that the experimental work on rickets in America has been done on the rat, an animal whose natural environment is one of filth and darkness; and that it is only when phosphorus is lacking from the diet that rickets has been produced. Thus, in the rat, sunshine is preventive and curative of rickets; but, as Hess and Unger have shown, the lack of sunshine is not causal. This statement seems to indicate that a hygienic factor may cure a case of rickets that has been caused by a dietetic error. The dog is much more sensitive to bad hygienic conditions, and it is now accepted that with a defective diet, rickets is aggravated if the animal is

[1] *Quart. Journ. Med.*, January, 1922, p. 167.
[2] *Journ. Amer. Med. Assoc.*, January 21st, 1922.
[3] *Proc. Soc. Exper. Biol. and Med.*, 1921, xix, p. 8
[4] *Amer. Journ. Dis. Children*, 1921, xxii, p. 186.

confined in unwholesome conditions. While Mellanby, however, states that puppies during absolute confinement will not develop rickets if the diet is good, Noël Paton, Findlay, and Watson claim to have produced rickets in pups given an abundant diet of oatmeal and milk, but kept in confinement. The discrepancy between these results may be explained by the fact that in the former cod-liver oil was used, and in the latter it was not.

In view of these conflicting experiments it is not at present possible to give a final verdict on the etiology of rickets, and to assert that it is solely due to faulty diet, or solely to bad hygiene. It may indeed be found that both factors contribute to its production, as both have been found to contribute to its prevention and cure. But recent work on the subject, both experimental and clinical, has brought the different elements of hygiene into a prominent place; and it would be well that Hutchison's careful review of a large number of cases in India both from the point of view of diet and of hygiene, should be followed by similar clinical investigations in this country, in which the conditions of environment as to sunshine, open air, etc., would be scrutinized as carefully as those of the diet.

ANTISEPTIC DYES.

CONSIDERABLE popular interest has been aroused by a paper read recently before the Society of Chemical Industry at Manchester by Renshaw and Fairbrother on the antiseptic action of the coal-tar dyes. The facts mentioned concerning the extraordinarily potent antiseptic properties possessed by many of the coal-tar dyes have not yet found their way into the textbooks in general use, but a very large amount of work has been done on the subject during the last twenty years and many very remarkable substances have been discovered; for various reasons, however, the direct therapeutic results have been on the whole rather disappointing. It is impossible within the space at disposal to present an adequate summary of the work done on the antiseptic action of the coal-tar derivatives, but a few of the most striking results may be mentioned.

Bechhold and Ehrlich in 1906[1] studied the antiseptic action of halogen compounds of phenol and naphthol, and obtained results which show clearly the extraordinary variations in antiseptic action produced by slight changes in chemical constitution, and also the markedly specific action of some compounds. Both these points may be illustrated by stating the minimal lethal concentration for certain micro-organisms of three closely allied naphthol compounds: di-brom-beta-naphthol is fatal to *B. coli* in a concentration of 1 in 30,000, and to *B. diphtheriae* in one of 1 in 40,000; tri-brom-beta-naphthol kills *B. coli* in a concentration of 1 in 2,000, and *B. diphtheriae* in one of 1 in 400,000; tetra-brom-beta-naphthol has a lethal action on *B. coli* in a concentration of 1 in 1,000, and on *B. diphtheriae* in one of 1 in 200,000. It will be seen that di-brom-beta-naphthol has an equal antiseptic action on *B. coli* and *B. diphtheriae*, but that the addition of an atom of bromine greatly reduces the first action and greatly increases the second action. Still more remarkable results have been obtained with the more complex coal-tar dyes, and some instances of extraordinary specificity have been found. Browning, Cohen, and Gulbransen[2] describe a substance —sensitol red—which has a lethal action on *B. coli* about two thousand times greater than its action on staphylococci.

The specific actions of antiseptic dyes are of course of the greatest value to the bacteriologist in preparing selective culture media. The antiseptic action of coal-tar dyes, such as brilliant green and violet green, has been used for the disinfection of skin in such regions as the perianal region, which are specially difficult to render sterile.[3] It is easy to find a very large number of dyes which act as powerful antiseptics in water at very high dilutions, but only a small fraction of these will exert a powerful antiseptic action in the presence of proteins, and an antiseptic which is to be of use in disinfecting wounds or mucous surfaces must act in the presence of excess of protein. Furthermore, the disinfectant must act on bacteria at a lower concentration than that required to injure the tissues of the host. Only a small fraction of the antiseptic dyes fulfil these conditions.

The flavine dyes introduced into therapeutics in this country by Browning are some of the most successful antiseptic dyes. The activity of most dyes is greatly reduced by the presence of protein—for instance, the antiseptic activity of brilliant green in serum is only 1 per cent. of its activity in peptone water, but the presence of serum actually increases the activity of proflavine tenfold.[4] Acriflavine and proflavine have both been found to be of service in the disinfection of wounds, in the treatment of gonorrhoea, and as urinary disinfectants.

Internal disinfection in generalized bacterial infections by means of chemotherapeutic agents is, however, the great achievement desired by all those who are investigating specific antiseptics. The achievement of this result might, of course, revolutionize the treatment of a large proportion of human disease. Internal disinfection has been attained to a large extent in the case of trypanosomal and spirochaetal infections, for chemotherapeutic agents are available a single injection of which will cure an animal already moribund from such infections. Nothing approaching this has as yet been found for bacterial infections. The positive results obtained in the treatment of leprosy by the chaulmoogra oil derivatives show that it is possible to destroy bacteria living in the human tissues by the injection of a therapeutic agent.

A certain number of positive laboratory results have been obtained by treating animals suffering from various forms of septicaemia with injections of the flavine compounds and also with injections of quinine derivatives (optochin[5]). A large number of negative results have also been obtained with these substances, and they have not become established as therapeutic remedies for septicaemia. The experiments of Lewis[6] on the action of dyes on tuberculosis illustrate the difficulties involved in experiments of this nature. Lewis obtained dyes which had a marked specific action on the tubercle bacillus *in vitro*, and when injected into the living animal could penetrate to the centre of the masses of diseased tissue, and yet he could find no substance which had a markedly beneficial effect on the process of infection in man or animals.

The few instances mentioned above serve to illustrate the point mentioned at the beginning of this article. An enormous amount of work upon specific bacterial disinfectants has been done, and much valuable information has been obtained, and yet the results are on the whole rather disappointing. They are disappointing because they fail by such a narrow margin to achieve much greater things. It would seem that with the knowledge now possessed we ought to have drugs which would produce the same effect on septicaemia as salvarsan does on syphilis. The attainment of this effect has been approached many times by many different workers, but yet in every case partial or complete failure has resulted.

[1] Bechhold: *Kolloide in Biologie und Medizin*, Leipzig, 1920, p. 436.
[2] BRITISH MEDICAL JOURNAL, 1922, i, 514.
[3] Browning and Bonney: BRITISH MEDICAL JOURNAL, 1918, i, 562.
[4] Browning: *Applied Bacteriology*. Oxford Medical Publications. 1918, p. 72.
[5] Browning and Cohen: BRITISH MEDICAL JOURNAL, 1921, ii, 695.
[6] Lewis: Harvey Lectures, 1916-1917, p. 112.

THE PRESIDENCY OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE President of the Royal College of Physicians of London is elected annually on the Monday following Palm Sunday. On April 10th Sir Norman Moore, who has held the Presidency with much distinction for the past four years, intimated his wish not to be re-elected. Sir Humphry Davy Rolleston, K.C.B., M.D., was elected President in his place and duly inducted by the Senior Fellow present. The new President, who is a graduate of Cambridge in Arts and Medicine and Emeritus Physician to St. George's Hospital, was elected a Fellow of the College in 1894, and his election to its highest office will be welcomed on every ground by the medical profession. He is a former scholar and Fellow of St. John's College, Cambridge, and a student of St. Bartholomew's Hospital. In the South African war he was consulting physician to the Imperial Yeomanry Hospital, Pretoria. From 1914 to 1919 he served as consultant physician, with the rank of surgeon rear admiral, in the Royal Navy; for his services, recognized throughout the navy, he was created C.B. in 1916 and K.C.B. in 1918. Sir Humphry Rolleston is a past-President of the Royal Society of Medicine, and on the occasion of the annual meeting of the British Medical Association at Newcastle last year received the honorary D.C.L. degree of the University of Durham. He holds many other academic honours, both British and foreign, and has served with distinction on numerous boards and public committees. His name is associated with that of Sir Clifford Allbutt as joint editor of the second edition of the standard *System of Medicine*, and his clinical learning and scholarship are shown in his writings on diseases of the liver and many other publications. He was Goulstonian Lecturer of the Royal College of Physicians in 1895, Lumleian Lecturer in 1919, and was Senior Censor at the time of his election to be President. On many occasions he has given most valuable assistance to the British Medical Association as a member of its Science Committee and of the Arrangements Committee for the scientific work of the Annual Meetings. He was secretary of the Section of Pathology and Bacteriology in 1895; vice-president of the Section of Medicine in 1899, of the Section of Pathology in 1904, of the Section of Diseases of Children in 1910; and president of the Section of Medicine at Cambridge two years ago.

ANTITYPHOID VACCINATION BY THE MOUTH.

ATTENTION has already been drawn[1] to the fact that Professor Besredka has prepared an antityphoid vaccine, combined with bile, which, he claims, will produce satisfactory protection against typhoid when administered by the mouth. The importance of the matter is obviously very great, for it is very difficult to get men even when under military discipline to submit voluntarily to antityphoid inoculation, and it is almost impossible to get inoculation carried out effectively in a civil population. Our previous note on this subject was short because at the time of writing there was no record of any practical application of the method on which to base a judgement. The result of a trial on a fairly extensive scale has recently been published by Dr. Vaillant,[2] the medical inspector of the health department of the Pas de Calais. An epidemic of typhoid broke out last autumn in six of the villages in the devastated region of the Pas de Calais. That considerable section of the British medical world which has first-hand experience of the sanitary conditions of such villages will apreciate the danger of such an outbreak. Antityphoid inoculation was commenced, but had to be discontinued because the only persons who would submit to it were the inhabitants of one village where the epidemic had been particularly severe. The administration by mouth of Besredka's antityphoid vaccine and bile was then tried. The details given are not very precise; Vaillant merely states that each inhabitant took on an empty stomach, on first getting up, a bile pill and a compressed tablet containing a mixture of typhoid, paratyphoid A, and paratyphoid B bacilli killed by heat. In adults the dose was repeated for three mornings in succession; in children for only two mornings. The results are stated to have been remarkably successful. Among the non-vaccinated persons, estimated to number from 400 to 650, fifty cases of typhoid fever occurred; that is to say, about 8 per cent. of the non-vaccinated persons were attacked; 173 persons were vaccinated hypodermically (with T.A.B.); of these four, or 2.3 per cent., suffered from typhoid fever. The number of persons given Besredka's antityphoid tablets by the mouth was 1,236, and of these only 2 (0.17 per cent.) developed typhoid fever. There are certain sources of error in these figures which need consideration. About half the cases of typhoid occurred before prophylactic measures were commenced, and it was the inhabitants of the most severely infected village who submitted to hypodermic inoculation with T.A.B. Hence the figures as to the non-vaccinated and as to those vaccinated hypodermically appear to be more unfavourable than was in fact the case. After allowing for these errors, however, the figures afford strong evidence for the value of Besredka's method. The real value of any antityphoid measure is of course a question of very great practical importance, for the safety of a community may depend upon the efficacy of the methods employed; hence extreme caution is demanded before any new method is finally accepted. The figures quoted, however, supply strong prima facie evidence for the value of the new method; it is to be hoped that it will be further tested on as large a scale as possible whenever opportunity occurs.[3]

THE PASTEUR CENTENARY AT STRASBOURG.

THE centenary of the birth of Pasteur is to be celebrated at Strasbourg in May, 1923, when a monument is to be inaugurated to his memory in front of the University of Strasbourg, where he taught from 1849 to 1854. Pasteur was born at Dôle, in the Department of the Jura, on December 27th, 1822. His first appointment was to teach physics at a school in Dijon, but he did not remain there long. At the end of 1848 he became a member of the faculty of the University of Strasbourg; he began work there in January, 1849, as a teacher of chemistry, and married shortly afterwards. It was there that he completed work begun in Paris on tartaric and racemic acids, and there also that he made his first tentative experiments with micro-organisms. He remained at Strasbourg until 1854, when he was appointed professor and dean of the science faculty then newly constituted at Lille. As at present arranged the inaugural ceremony at Strasbourg will take place on May 1st, 1923, and it is hoped that it will be attended by members of Pasteur's family, and by M. Roux, director of the Institut Pasteur, Paris, by other representatives of that institute, and by delegates of the Institut de France and other learned bodies in that and other countries. A congress of hygiene and bacteriology will be opened on the same day in Strasbourg, as well as an exhibition designed to illustrate the advances made in various branches of science as the result of Pasteur's discoveries. The scheme has the support of the President of the French Republic, M. Millerand, of M. Loubet, who was President of the Republic during the war, of M. Leredu, Minister of Hygiene, and of M. Alapetite, Commissioner General of Alsace and Lorraine. A committee has been formed in this country to support the scheme, with Sir Charles Sherrington, G.B.E., M.D., President of the Royal Society, as chairman; Mr. A. Chaston Chapman, F.R.S., President of the Institute of Chemistry, as treasurer; and the following members: Mr. H. E. Field, President of the Institute of Brewing; Professor Percy F. Frankland, C.B.E., F.R.S., Emeritus Professor of Chemistry, University of Birmingham; Sir John McFadyean, M.B., B.Sc., LL.D., Principal of the Royal Veterinary College; Professor C. J. Martin, C.M.G., M.D., F.R.S., Director of the Lister Institute; Sir W. J. Pope, K.B.E., F.R.S., Professor of Chemistry, University of Cambridge; Sir James Walker,

[1] BRITISH MEDICAL JOURNAL, January 21st, 1922.
[2] *Annales de l'Institut Pasteur*, T. 36, p. 149, 1922.

[3] Tablets made according to Besredka's formula can be obtained from Sealand Trading Limited, 24, Holborn, London, E.C.1.

F.R.S., President of the Chemical Society; and Sir Almroth Wright, K.B.E., M.D., F.R.S. We feel sure that the scheme will be welcomed in this country, and that among those who will wish to support it are many members of the medical profession, who know perhaps better than those of any other calling how great and beneficent have been the effects of Pasteur's pioneer work in bacteriology. Subscriptions may be sent to Mr. A. Chaston Chapman, at the Institute of Chemistry, 30, Russell Square, London, W.C. 1, or to M. Th. Hering, 6, rue des Veaux, Strasbourg, the general secretary, and treasurer of the French Committee. The subscription list will be closed at the end of June next. It is hoped also that manufacturers and other business firms in this country will take part in the exhibition, full particulars of which can be obtained on application to Professor Borrel, 3, rue Koeberlé, Strasbourg.

SCIENTIFIC SECTIONS AT THE GLASGOW ANNUAL MEETING.

AT the forthcoming Annual Meeting of the British Medical Association at Glasgow the officers of the Section of Physiology have arranged the following programme. On Wednesday, July 26th, there will be in the morning a joint meeting with the Section of Diseases of Children, when the subject for discussion will be "Rickets." Dr. Leonard Findlay, of Glasgow, will introduce the subject from the clinical side, and Professor E. Mellanby, of Sheffield, will open from the physiological side; later in the discussion there may possibly be a paper on "Dental hypoplasia and rickets," by Dr. J. Sim Wallace of London. On the morning of Thursday, July 27th, there will be a meeting of the Section at which the subject discussed will be "Basal metabolism," with an opening paper by Professor E. P. Cathcart of Glasgow. In the afternoons of both days there will be demonstrations in the Physiological Institute. The officers of the Section of Obstetrics and Gynaecology have made the following provisional arrangements. On the first day there will be a discussion on "Stillbirths and pre-natal deaths"; it is hoped that the speakers will include Dr. Ballantyne, Dr. Eardley Holland, Dr. Browne, Professor Kennedy, Dr. Cruickshank, Dr. Strachan, and Dr. Lindsay. For the second day the following discussions are provisionally arranged: (*a*) "Surgical treatment of prolapse," opened by Dr. W. E. Fothergill; (*b*) "Treatment of eclampsia," opened by Dr. T. W. Eden; (*c*) "Anaesthetics and analgesics in labour," opened by Dr. Greenwood. The names of the officers of the scientific Sections were printed in the SUPPLEMENT of February 18th, at p. 39. The Sections will meet on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th.

SMOKE PREVENTION AND PUBLIC APATHY.

LORD NEWTON, the Chairman of the Departmental Committee on Smoke Abatement, has complained lately of the absence of public interest in that inquiry. The impressive evidence which the Committee received as to waste, pollution, and disease in consequence of the smoke nuisance had, he said, been passed over by the press almost without notice. Only once had his Committee a glimpse of public renown. It happened that while visiting an industrial district in the north he was the guest of a peeress who had been engaged in the arcadian operation of harvesting oats, and owing to the smoke of neighbouring factories, her blouse, which was white when she began, was black before she finished. This blouse caught the public imagination, and bade fair to rank among the celebrated garments of history. It was photographed for the illustrated papers, it appeared on exhibition in London, and it had now found a permanent home in the museum of an important provincial city, where it remained, said Lord Newton, an illustration of our sooty skies and of the labours of our nobility. After this sensation his Committee sank again into oblivion. Not a member of Parliament had had the curiosity to ask whether the Government contemplated legislation to deal with the evil. Lord Newton believed that, however much Englishmen might pride themselves on their personal cleanliness, England was certainly the dirtiest country in Europe, and possibly in the world, owing to its indiscriminate and wasteful use of raw coal for all purposes, domestic and industrial. Recently he had visited Germany, which was looked upon as a law-ridden country, but he found that there was less legislation on this subject than in the United Kingdom; yet when he compared Cologne and Düsseldorf with Manchester and Sheffield he felt a sense of degradation. There was no great pressure on the part of the Government in Germany, and the cleanly state of the cities in this industrial Rhine district was really due to the application of common sense and a determination not to tolerate nuisances. In England, when a man made a fortune out of industry he retired as far from the factories as he could; in Germany he remained within the urban boundaries, because life there was physically as pleasant as it was outside, and much more interesting. Lord Newton's remarks were preliminary to a lecture by Dr. Saleeby on the effects of sunlight as observed among the children at Leysin under Rollier and at Alton under Gauvain; and a resolution, commended to the meeting by Sir Henry Gauvain, was adopted, calling upon the Minister of Health to give effect to the recommendations of Lord Newton's Committee.

MILD SMALL-POX.

RECORDS of outbreaks of mild small-pox or alastrim accumulate; the most recent is contained in a report by Dr. Boobbyer, medical officer of health for Nottingham. He recalls how, more than twenty years ago, he reported certain cases among Mormon missionaries who had visited Nottingham, and who were responsible for subsequent prevalence in the Midlands. He has now, since early in 1921, had a series of cases, numbering altogether 113, without a death; he however objects to the view that alastrim—if the name be accepted—is persistently mild, seeing that one unvaccinated adult had a severe confluent attack and barely escaped with her life. Owing to the mildness of the attack in many of the cases, especially of young unvaccinated children, it was commonly reported even by medical practitioners that they were suffering from varicella, but a careful study of the cases, and of the age incidence upon the unvaccinated and vaccinated respectively, confirmed the diagnosis of small-pox; incubation period, prodromal and onset symptoms, and rash all pointed to small-pox—in some cases of so mild a form that a magnifying glass was necessary to reveal the typical features of papule, vesicle, pustule, or scar; these features, however, were present and apparent when carefully sought for. His table of cases illustrates the remarkable reversion of age incidence which is taking place under the influence of neglected infantile vaccination. In the days of Jenner small-pox was, like measles and whooping-cough, a disease of childhood. The practice of vaccination under the obligatory laws gradually drove it from childhood into later life, which was unprotected for want of systematic revaccination. Now again, however, children are, in constantly increasing numbers, unprotected; and Dr. Boobbyer's figures show how amongst the unvaccinated small-pox is once more finding the bulk of its victims in the young. In the vaccinated section of the population, on the other hand, small-pox still avoids childhood, and the mild type in Nottingham found vulnerable no vaccinated individual under thirty years of age. Fortunately for all concerned, the disease was so trivial that the punishment exacted from the young for the folly of their parents consisted only of non-fatal attack, instead of the high fatality which would have accompanied an outbreak of the variola of the standard type of former years.

A MEDICAL POSTMASTER-GENERAL OF THE UNITED STATES.

DR. HUBERT WORK, President of the American Medical Association, took the oath of office as Postmaster-General of the United States on March 4th. Dr. Work is the first member of the medical profession to receive Cabinet rank in the United States since Dr. James McHenry served as

Secretary of War in the Cabinets of Washington and Adams. He is said to have been the youngest medical practitioner ever elected president of the Colorado State Medical Society, and for four years he was also President of the Board of Health of that state. He has been a member of the House of Delegates of the American Medical Association since 1904, and in 1916 he was elected Speaker, a position which corresponds to that of Chairman of the Representative Body of the British Medical Association. He became President-elect of the American Medical Association in 1920, and is now actually serving as President of the Association. During the war he was medical adviser to the Provost Marshal-General, in which position it is stated that his diplomatic qualities were of inestimable service. President Harding, when he took over the reins of government, appointed him First Assistant Postmaster-General, and he now becomes Postmaster-General in succession to Mr. Will H. Hays, who resigned to accept a very highly paid post as organizer of the cinematograph industry. Dr. Work's appointment was unanimously confirmed, without the usual reference to a committee, within an hour after his nomination was received by the Senate, in spite of the fact, as the *Journal of the American Medical Association* records, that senators and representatives were bombarded with telegrams, letters, and petitions from the antimedical faddists in general and in particular from those to whom scientific medicine is anathema.

A CORONER ON UNQUALIFIED PRACTICE.

OUR attention has been drawn to newspaper reports of a recent coroner's inquiry, held at Spennymoor, co. Durham, into the death of Mary Ellen Kay, a married woman staying at her parents' house for her confinement, with an uncertified midwife in attendance. According to these accounts it appears that the midwife, on March 23rd, sent for an unqualified man named Ross, who had been chosen by the family to attend Mrs. Kay, and had previously visited her. In his evidence Ross described himself as an unregistered medical practitioner who had for the past twenty years been in practice in the district; on an average he attended 180 confinements a year. After visiting the patient on this occasion he told the parents that owing to her condition and the fits from which she was suffering it would be advisable to get further medical aid. He then wrote a note to Dr. Pattullo asking him to attend, but left before any doctor came because he knew that whilst he was there a qualified man would not come. He saw that an anaesthetic was necessary, and that therefore two practitioners were required; he himself had no assistant. Further evidence showed that the case was then taken over by Drs. Mussellwhite, Pattullo, and Charlton; an operation was performed and the woman was delivered of twins, one dead but the other alive. The mother died the following day from puerperal eclampsia. Dr. Pattullo, in answer to the coroner, said he would not like to give any definite opinion as to whether there were any ill effects due to delay; but in his opinion to leave the case alone was very bad practice indeed. He added that the qualified medical practitioners in the town strongly resented that Ross should be in a position to call in a doctor. To this the coroner replied that he did not think the jury were concerned with the dispute between Mr. Ross and the qualified men. The jury having returned a verdict in accordance with the medical evidence, that Mrs. Kay's death was due to puerperal eclampsia, Dr. Pattullo rose to protest, on his own and Dr. Mussellwhite's behalf, against being called upon to attend Mr. Ross's difficult cases. The coroner said that this was not a matter for the jury, or himself as coroner. Dr. Pattullo replied that they had decided not to attend if Ross called them again. Upon the coroner advising him not to use any threat, Dr. Pattullo explained that it was only a warning. The coroner then made the following observation: "If there is any negligence by which a life is jeopardized, and I have anything to do with it, it may amount to manslaughter, and that is all I can say. I would not spare anyone, either qualified or unqualified." The coroner's statement in this case appears to have been entirely uncalled for and not altogether intelligible. He is generally understood to have implied that if a life is lost as a result of a doctor failing to attend a patient when summoned, the doctor may find himself indicted for manslaughter. This is a view of medical obligations for which there is no justification. A doctor is not required to attend in response to a summons save from one in regard to whom he is under contractual obligations, such as an employee of a firm with which he has contracted, or an insured person on his list, or a woman whom he has definitely agreed to attend in her confinement. In this case it does not seem that any such relation existed; so far as can be gathered from the reports in the newspapers the woman was not an insured person, and Ross had been engaged to attend her in her confinement. As a matter of custom the doctor's right to refuse to attend in a case of urgency is rarely exercised, and it is well known that in such circumstances a large amount of medical attendance is given for which no remuneration is ever received. It is this very altruism which has led to the exploiting of the medical man and given rise to the belief in some quarters that he is at the beck and call of anyone who chooses to send for him. It is desirable that coroners and others should understand that this is not the case; still less is it incumbent upon a practitioner to attend when he is not sent for by the patient or a responsible relative or guardian of the patient, but by a person who has no legally recognized status towards the patient. This inquest once again calls attention to the evils of unqualified practice, but we fear that no steps will be taken to alter the present position until public opinion has been educated more closely to the level of medical opinion. It is not an offence in this country for an unqualified person to practise medicine, provided he does not wilfully and falsely pretend that he has a medical qualification or that he is recognized by law as a physician or surgeon. The General Medical Council has no power to initiate proceedings against unqualified practitioners of medicine. Where, however, there is reason to suppose that the Medical Acts have been infringed the facts should be laid before one of the medical defence societies, which have often successfully prosecuted offenders.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

THE arrangements for the short course in general medicine from May 1st to 13th, as already announced, are now complete, and lectures and demonstrations will be given at the following institutions: National Hospital for Diseases of the Heart, Bethlem Royal Hospital, Royal Westminster Ophthalmic Hospital, Paddington Green Hospital for Children, Middlesex Hospital, London Lock Hospital, St. Mark's Hospital, Maida Vale Hospital for Paralysis and Epilepsy, Brompton Hospital, and St. George's Hospital. Application for copies of the syllabus and tickets admitting to the course should be made to the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1. This course will be repeated during the summer, and others of a like nature in children's diseases, tropical medicine, etc., are in course of preparation. The series of lectures at the Royal Society of Medicine, 1, Wimpole Street, announced last week, will commence on Monday, May 1st, and the opening lecture will be delivered at 5 p.m. by Sir Humphry Rolleston, on "Recent physiology of the liver and its application in practice." Other lectures for May will be as follows: Tuesday, 9th, Sir Arbuthnot Lane, "Fractures"; Tuesday, 16th, Sir Thomas Horder, "The clinical significance of haemoptysis"; and Wednesday, 24th, Sir StClair Thomson, "The surgical anatomy of the nose and accessory sinuses" (lantern demonstration). The complete list of lectures to the end of July will be forwarded on application to the Secretary to the Fellowship of Medicine.

A NATIONAL Congress of Hygiene will be held at Naples in May, when the principal subjects for discussion will be alcoholism in its various aspects, sexual hygiene and prophylaxis, and personal cleanliness.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

National Insurance Bill.

Explanation by the Government Actuary.

SIR ALFRED W. WATSON, Government actuary, has issued a document in explanation of the financial provisions of the National Health Insurance Bill. He deals first with the additional charge which it is proposed to make until December 31st, 1923, on the funds of approved societies and the Deposit Contributors' Fund in respect of the cost of medical benefit, in order to relieve the Exchequer of substantial payments hitherto met out of special grant voted by Parliament. He estimates that the additional cost to insurance funds, during the period from April 1st, 1922, to December 31st, 1923, will be as follows:

Country.	Maximum Charge per Insured Person per Annum.	Aggregate Charges, April, 1922—December, 1923.
	s. d.	£
England	2 6	2,750,000
Scotland	2 11½	450,000
Wales	3 1½	220,000
Great Britain	—	3,420,000

The Government actuary points out that the bill provides that the whole of the above sum shall be met in the first instance out of Insurance Funds without recourse to the Exchequer, and that the usual State grants of two-ninths of benefit shall not be paid when the sums in question are disbursed. Under the proviso to the clause, however, power is taken to recoup at a later period societies in respect of the loss of State grant. This means, although Sir Alfred Watson does not precisely say so, that the societies, in shouldering the extra burden, are not to lose the aid of the usual State grant of two-ninths of the benefits. If the aggregate sums to be applied as stated had not been required for the purpose named, they would have formed part of the surpluses disclosed at the next valuation of societies, and in general would have inured to the members in the shape of additional benefit, two-ninths of which would be defrayed out of the Exchequer. The bill accordingly provides that the funds of societies shall be recouped by a grant after the next valuation, as though the sums now disbursed for medical benefit were then made available, with such interest additions as in the meantime would have accrued in respect of them for additional benefits. Sir Alfred Watson estimates that under this arrangement a sum of £180,000 a year will fall to be paid by the Exchequer for the period of five years beginning April 1st, 1925. Approximately, of the total sum of £900,000 so payable, £140,000 will be in respect of the interest additions. In the circumstances the sum of £900,000 is not an additional charge, but substantially one which would have come in the course of payment in those years under the normal arrangement of the scheme of National Insurance.

Sir Alfred Watson next shows how it is that the approved societies are able to meet the additional charges contemplated without requiring increase in the contributions of insured persons or their employers. During the first six years of the Act the great majority of approved societies accumulated substantial surpluses by reason of their light sickness experience and other elements of gain operating during the period. The aggregate surpluses of societies and branches in Great Britain reached £16,850,000, of which amount sums amounting to about £9,000,000 were certified as disposable surplus and available for the purpose of granting additional benefits to the members of the societies concerned. Surpluses amounting to nearly £8,000,000 were thus carried forward.

In addition to these surpluses, contingency funds amounting to over £6,000,000 had been accumulated by societies, and these also were carried forward, almost intact, as a further reserve to the benefit funds of societies, to which, in fact, they failed to be transferred as on January 1st, 1919. Apart, therefore, from the sums made available for additional benefits, the benefits funds of approved societies, taken collectively, were some £14,000,000 in excess of their liabilities for benefits. It was, however, important to bear in mind that the several societies and branches were independent financial units, and that (subject to certain special and limited arrangements for the protection of small societies and branches) each society or branch was entitled only to resort to its own portion of this aggregated sum. Having regard to this point, and to the fact that the acute and prolonged unemployment from which the community is now suffering has caused heavy loss of contributions, and may bring other serious losses, the actuary holds that the greatest care must be exercised in imposing new burdens upon the societies. The proposals in the bill in respect of medical benefit contemplate a charge, limited in amount and temporary in operation, and he thinks that this may be safely borne; but he wishes it to be clearly understood that his opinion stops there.

In regard to the abolition of the Exchequer grant to the Women's Equalization Fund, the Government actuary mentions that the sum amounts at present to £350,000 per annum. The purpose of the fund was to assist societies in respect of the sickness claim of their married women members by supplementing the contributions of this class of insured persons. It is proposed in lieu of the maintenance of this fund that additional reserve values should be credited to societies in respect of married women members. The actuary estimates that the reserve values required for the purpose will amount to about £1,000,000 at the outset, with an annual addition of about one-tenth of this sum as insured women marry.

Coming to the intended change in the disposal of unpaid contributions, Sir Alfred Watson says that at present nine-tenths of any sums set free from the Stamp Sales Account is carried to the Central Fund and the remaining tenth may be applied to other purposes. Power is taken in the bill to reduce the amount to be carried to the Central Fund, and to make such payments to approved societies as will enable them to avoid the suspension from monetary benefits of members who have suffered prolonged unemployment through the industrial conditions. The amount of the charge thus expected to arise will depend primarily on the number of persons owing twenty-six contributions or more at the end of next June. Judging by the estimates prepared in connexion with the Unemployed Insurance Bill, it appears probable that at least one million persons will thus be in arrears, and on this basis a minimum expenditure of £250,000 out of the contribution money must be contemplated. The total expenditure may be considerably greater, but it is understood that the balance available is well in excess of any demand that is likely to arise, assuming that the payments in individual cases are governed by the normal regulations as to arrears.

Public Assistance Expenditure.

Sir J. D. Rees raised a debate on April 4th as to expenditure on public assistance. His motion alleged that the expenditure in this connexion had risen from twenty-five millions sterling in 1890–91, to three hundred and thirty-two millions in 1920–21, and would probably be not less than four hundred millions in 1921–22, and that thirty million persons, exclusive of unemployed, out of a population of forty-eight millions, had been in receipt of such public assistance in 1919–20. His resolution asked that a Royal Commission or Board should be appointed to ration such expenditure.

Mr. W. Graham, one of the most thoughtful members of the Labour party, took the view that large expenditure on social services was inevitable, at any rate until the housing problem had been tackled, and industry placed in a better position.

Mr. Hilton Young, for the Government, said that the increase in prices and in wages had made it much more costly to carry on the social services—twice as costly as in 1891, with which year comparison had been made. Another point to be remembered was that the population had risen since then from thirty-eight millions to forty-seven. Those considerations should be weighed, along with the fact that new services had become inevitable. The real remedy was in watching the estimates.

Mr. Macquisten, touching a remark by Mr. Young, that nobody would think of repealing the National Insurance Act, held, on the contrary, that this would be a popular thing to do. If the same principle were to be applied to the legal profession—if the public were required to hand over so much a week to a panel solicitor or barrister for the purpose of getting advice—the legal advice obtained in such circumstances would be the same kind of advice, he imagined, as the medical advice given by the panel doctor. A profession could not be worked in this way. It was merely a tax upon unfortunate people for the support of a profession. No doubt the majority of doctors still had the old professional standard, and he believed it would last for many years. The general effect had been to provide men, who could not get practices in the ordinary competition in the medical profession, with a very satisfactory beginning. The thing was carried on by inflicting penalties upon very poor people who could get no benefit from it. For instance, the mariners got nothing out of it; they were all at sea, and were treated at the expense of the shipowners, and yet they were fined for this purpose. The very nurses, who had all their medical attention free, had been brought in to pay a tax for the benefit of other people. It was a monstrous imposition.

The motion was afterwards withdrawn.

Local Government Officers' Superannuation.

Sir Herbert Nield, on April 7th, moved the second reading of the Local Government and other Officers' Superannuation Bill, which he had introduced as a private measure. He explained that it was a purely optional proposal, the object being to enable authorities to adopt the provisions as they might think fit. The number of public servants who would be eligible to come under the bill was 38,500 officers and 167,000 working men. At present 60,000 officers as well as 200,000 workmen who were employed by local authorities were covered by schemes. Some others were also covered by Local Acts. The measure was based on the Middlesex Act of last year. The desire was that superannuation schemes should not be dependent upon private bill legislation, which involved delay. Sir Herbert added that he was willing to extend the proposals to part-time officers when the bill went into Committee. Mr. Neville Chamberlain, seconding the motion, claimed for it three advantages: It would enable a local government authority to attract to its service a better class of men than it could otherwise get; it would enable the authority to keep officials in its service for many years; and would enable such to remove an official who had ceased to be efficient through old age, without doing him an injustice or running contrary to its own national feelings.

Sir Alfred Mond said it was the intention of the Government one

time to introduce a compulsory bill to cover the question of superannuation of officers of local authorities throughout the country, but it was felt that the imposition of such a heavy burden could hardly be faced at the present time. The bill before the House being permissive, he did not object to a second reading. He pointed out, however, that the thirty clauses raised very difficult questions—he was advised there were serious defects in the actual provisions, and there was involved a risk of expenditure up to three or four millions a year by local authorities.

After further discussion the bill was read a second time and referred to a standing committee.

Insurance Pharmacy Terms.—The Ministry of Health is about to issue the revised scale of terms of payments to be made to panel chemists for two years from May 1st. The rate for compound liquid medicaments (excluding preparations specified in the table for drug prices for proprietary preparations) will be reduced to 5d. per prescription, and the rates in respect of the remaining items in the dispensary fee scale will be reduced 1d. per prescription. Further reference to this matter appears in a Current Note in the SUPPLEMENT this week.

The Cost of Health Insurance.—On inquiry by Sir J. D. Rees, on April 5th, Sir A. Mond said that in respect of health insurance in England and Wales, the total charge upon the State for the year 1920–21 was approximately £9,500,000, and for the year 1921–22 was estimated to be £9,000,000. The contribution of employers and employed were in 1920–21 approximately £21,400,000, and in 1921–22 were estimated at £21,600,000.

Royal Army Medical Corps.—Dr. Fremantle asked, on April 4th, the number of officers at present serving in the R.A.M.C. who had passed the age for retirement, thus preventing the promotion of senior majors in the corps; and whether all officers who were past retiring age would now be retired. Sir L. Worthington-Evans said the answer to the first part of the question was none, and the second therefore did not arise.

Dentists' Register.—Replying to Colonel Wedgwood, on April 5th, Sir A. Mond said he understood that it was the custom of the Dental Board, in the case of applicants for registration who had been employed by another unregistered practitioner, to accept a sworn declaration by the employer as corroboration of the statement made by the applicant himself.

Lunacy Reform.—Sir A. Mond, on April 5th, informed Captain Loseby that he still hoped to be able to introduce a Lunacy Reform Bill, but that depended upon the time of the House and other matters not under his control. If he did not introduce a bill he would reconsider the suggestion for the setting up of a Royal Commission.

Small-pox Hospital for Southampton.—Sir A. Mond stated, on April 5th, in answer to Major Hennessy, that he had no objection in principle to the scheme of the Southampton Town Council for the acquisition of a small-pox hospital from the Winchester Rural District Council and of certain other small-pox hospitals in the county. He was advised, however, that a local inquiry should be held before sanction could be given. He was ready to hold inquiry immediately on receipt of certain information for which he had asked in September last.

Coroners' Courts.—In reply to Major Claude Lowther, on April 4th, Mr. Shortt said that it was proposed to deal in the Coroners' Bill with the duplication of proceedings in magistrates' and coroners' courts, but he could not say at present when the bill would be introduced.

Income-tax Assessments.—In response to Mr. Marriott, on April 7th, Mr. Young said the number of individuals in Great Britain and Ireland with incomes above the exemption limit for the year 1921–22, was provisionally estimated at five millions, divided as follows:

Number actually paying income-tax	2,400,000
Number whose incomes are covered by the personal allowances and deductions and reliefs ...	2,600,000

The number of individuals liable to super-tax for the year 1920–21 (based on the income-tax income for the previous year 1919–20) on incomes of £5,000 and over and assessed thereto up to February 28th last was as follows:

£5 000 and under £10,000	15,799
£10 000 ,, £20,000	6,389
£20,000 and over	3,167

These numbers were not final, as further assessments to super-tax will still be made.

The Purity of Milk.—Sir Alfred Mond, on April 6th, assured Mr. T. Thomson that he was carefully considering—in framing a new bill—the desirability of enabling local authorities to assist in securing improved supplies of milk in their area by means of classification and by having the power to revoke or suspend certificates, and of registration of all milk sellers in their area.

Deaths from Starvation.—On inquiry by Mr. R. Richardson, on April 6th, Sir A. Mond stated that no deaths from starvation or exposure were reported by the coroners as having occurred during the year 1919 in the counties of Durham, Yorkshire, and Berkshire, but in 1920 five were reported as having occurred in Durham and one in Yorkshire.

Paris.

(From our Correspondent.)

PROGRESS IN MEDICINE.

"SURGERY makes great strides. Medicine does not." This is one of those asinine little statements which may be heard almost daily. The reason is that surgery is spectacular. You cannot see such remarkable results as those reported by Nicolle to the Académie des Sciences a few days ago. The director of the Pasteur Institute of Tunis has been working on the possibility of preventive vaccination against Mediterranean fever.

A hundred billion sterilized *Micrococci melitensis* are given by the mouth daily for four days in succession; sixteen days later 450 million micrococci are injected hypodermically. No trouble is noticed. A volunteer acting as control, injected at the same time, developed a typical attack of fever, which was promptly stopped by curative vaccine. Exactly similar results were obtained with Shiga bacilli. We may hope, therefore, to vaccinate against Malta fever and bacillary dysentery by giving pills by the mouth, and it is quite legitimate to expect that cholera and typhoid fever will prove amenable to the same simple prophylactic measure. It is to be noted also that Vaillant has tested Besredka's method of giving killed vaccine and bile in a recent epidemic of typhoid in the north of France with encouraging results.

The question remains, how long such an immunity may last. At any rate, the method is an immense improvement on the inoculation methods owing to the great facility it affords for making prophylactic methods acceptable to the people, and so bringing the stamping out of epidemics within the scope of practical administration.

The fight against syphilis is well started. Weapons already available are effective, and new ones are being added to the arsenal. The bismuth salts are being actively tested and seem to answer Levaditi's claim. The BRITISH MEDICAL JOURNAL has lately reviewed the whole question, and little is to be added. We are still in the period of expectation and experimentation. If we had a practical test allowing us to measure the degree of luetic infection and to characterize the condition of "cure," we would be very far advanced in the choice of the weapon to use. The Wassermann test is fallacious. We build great hopes—and some of us even more than hopes—on Vernes's reaction. He has proved that the serum of syphilitics is physically affected so that it contains "something that may be measured." That something affects flocculation under determined conditions, and flocculation is measurable by optic methods. Hence the discovery of *syphilimetry*, which allows us—and this is new in the story of biology—to measure a degree in infection just as we measure a degree in temperature. A prophylactic institute is in full work in Paris (at the expense of the city council), and the method is spreading over the country. Statistics show that over 30,000 cases have been actually followed, and that means that serologic verifications, both on blood and cerebro-spinal fluid, number more than 400,000. How such work can be carried on at the rate of about 1,200 consultations a week can only be understood by those who spare a few hours to visit the institute in full work. It is all clinical organization and laboratory Taylorization. I looked over the visitors' book a few days ago. Medical men from all over the world had signed their names, but British visitors seem to be the very rare exception. The channel seems wide.

M. Pozerski, of the Pasteur Institute, is perhaps going to help to bridge it. He has been experimenting on sea sickness by the means of a clever mechanical apparatus allowing him to swing a cage exactly in the way a ship on a high sea moves. The involuntary passengers behave in very different ways. Rabbits, guinea-pigs, fowls, and pigeons are good sailors and do not mind six hours of stormy weather. But our friend the dog is, alas! more human, for of the dogs tested 30 per 100 were seasick—10 per cent. with asthenic symptoms and 20 per cent. with symptoms of excitement. Some get accustomed after the second "crossing." But how are we to argue from animal to man? Some dogs which have once been affected by experimental sea sickness are ill again and start vomiting as soon as they board the cage, and even before the engine is started. Clearly canine imagination is closely akin to ours, a similarity which might open a new field for M. Emile Coué in the veterinary world.

Our ears are buzzing on this side with the reception given to this gentleman in London. We did not know that we possessed so great a prophet. As a matter of fact M. Coué has taught us a practical lesson in psychology, which is that imagination is stronger than will. He has shown also that we can master our imagination by minor devices, as though we made a mould into which our subconscious self shapes itself, and our organs follow suit, shaking off the old bad habits that we call ailments. M. Coué is a humanitarian philanthropist and works *pro Deo*. Strangely enough, he is a retired pharmacist of Nancy, and we are puzzled to know whether or not it is surprising that a dispensing chemist turns out to be so sceptical as regards materia medica. At any rate he found out that auto-suggestion is just as good as hetero-suggestion, and he must be given the credit of striving to teach the patient not to depend on him. Twenty knots on a bit of string and a simple catch phrase: what a simplification! The medical profession on this side has not had a chance yet to meet M. Coué, and I venture to think that even if we invited him to practise in Paris the police might object. It is not so long since the pithy verses were written on the closed door of St. Médard:

> De par le roi, défense à Dieu
> De faire ses miracles en ce lieu.

India.

MATERNITY AND CHILD WELFARE.

THE first annual report has been issued of the Lady Chelmsford All-India League for Maternity and Child Welfare, which was founded by Lady Chelmsford, the late Vicereine of India, in February, 1920. Lady Reading has succeeded Lady Chelmsford as president; she has been indefatigable in her solicitude for the welfare of the women and children of India since her arrival, and has succeeded in obtaining a permanent office for the League. The training of health visitors is carried on at the school established by the League in Delhi, and through it twenty-six students have already passed. Propaganda has taken the form of the sale and distribution of literature and pamphlets, health exhibitions, illustrated lantern lectures, and the publication of the journal of the League, which circulates throughout India and has shown a credit balance on its first year's working. The preparation of a travelling exhibition has been taken in hand. Branches of the League have been established at a number of important centres, and the League has been affiliated with other bodies having similar objects, for its main purpose is to stimulate, assist, and co-ordinate local efforts, and not to supersede them. During the year Madras, Rajputana, and the Punjab formed associations for maternity and child welfare at their capital towns, which became affiliated with the League; welfare centres were also started at Simla, Calcutta, and Dacca. The organizing secretary of the League is Dr. Lilian Wemyss Grant, Delhi.

PLAGUE IN INDIA.

We have received a copy of the report by Dr. A. R. Mehta, medical officer of health for Rawal Pindi, on a recrudescence of plague in that city in the months of October and November, 1921. Rawal Pindi, from the local conditions, is apparently one of the endemic centres of plague in the world, and this epidemic started, like previous ones, in the autumn season in the old grain and fruit market of the city, the infection being propagated both by man and the rat. The preventive measures undertaken by Dr. Mehta included inoculation of a large number of the inhabitants, disinfection and fumigation of the houses, evacuation of the infected houses, rat trapping and baiting, the encouraging of the keeping of cats in the city, and propaganda by lectures and handbills. The outbreak was evidently handled energetically, although some of the measures enumerated are less valuable than others. In the medical officer of health's opinion the housing problem and the provision of rat-proof houses is urgent in Rawal Pindi, but the difficulties are considerable in view of the severe winter which that city experiences and of the mode of living of the general mass of the population. Drastic measures of dealing with the old grain market certainly appear to be urgently required.

England and Wales.

VENEREAL DISEASE ARRANGEMENTS IN LONDON.

THE London County Council, at its meeting on April 11th, considered the arrangements for the diagnosis and treatment of venereal diseases in London during the ensuing financial year. The Council joins with the local authorities of six adjoining counties and three county boroughs in a scheme for the common utilization of the facilities afforded by certain London hospitals for diagnosis and treatment and laboratory work in connexion therewith. London's proportion of the total expenditure is 82 per cent. It is proposed that this scheme be renewed for the financial year 1922–23. During 1921 the number of patients' attendances under the scheme was 496,209, as compared with 464,033 in 1920, but the number of new cases (25,418) showed a reduction of 5,628. The decrease is ascribed to the disappearance of certain abnormal conditions connected with the war and demobilization and, to some extent, to the continuous anti-venereal campaign. The institutions to which it is proposed to make grants include nineteen general hospitals, ten special hospitals, and seven hostels for the reception of young women during infectivity and of pregnant women and of children suffering from venereal diseases. In connexion with St. Paul's Hospital, premises have been purchased in Endell Street, and a considerable amount spent in adapting them for the purpose of an all-day clinic, with in-patient accommodation for twenty patients, and this, when completed by the early summer, will be one of the most up-to-date institutions of the kind in the country. The Public Health Committee of the London County Council has had its attention drawn to the varying practice of the hospitals as regards the remuneration of the staff engaged on venereal diseases work, and while not suggesting the adoption of a standardized system, thinks it would be desirable to encourage hospital authorities to appoint a whole-time staff, thereby avoiding frequent changes and lessening the expenditure. The Committee is in communication with the Ministry of Health on this question. Another proposed alteration is with regard to publicity and propaganda work. Since 1917 the National Council for Combating Venereal Diseases has been permitted to exercise certain of the Council's powers in this respect. It is now proposed to extend the arrangements for publicity and propaganda work made directly by the local authority, and to discontinue part of this work which has been undertaken by the National Council. The grants to be made for treatment and pathological work at the hospitals amount to £93,100, and the grants for the hostels to £3,600. With possible additional grants for clinics not yet opened and for developments in connexion with rescue and preventive work, the total expenditure under the scheme will be £112,500, as compared with £112,831 for the past year. The amount payable by London is £90,000, of which three-fourths will be recovered from the Treasury. The provision for the past year for publicity and propaganda work was £3,500; this is to be reduced by £1,000. The same amount as before (£5,000) is included in the estimates for drugs.

THE COMBINED HOSPITALS APPEAL.

The Executive Committee of the Combined 1922 Appeal on behalf of the hospitals in Greater London (19, Berkeley Street, W.1) announces that with a view to organizing a campaign in connexion with schools and other educational establishments in Greater London an education branch has been established. Lord Burnham will be chairman of the Central Committee dealing with educational help for the appeal. Mr. E. A. H. Jay, LL.D., a former chairman of the L.C.C. Education Committee, has been appointed director of the education branch. Representatives of the University of London, the different training colleges, the Teachers' Association, the Association of Secondary School Teachers, the Preparatory School Teachers' Association, and representatives of private schools have been invited to a conference on May 9th to discuss arrangements. Donation accounts on behalf of the appeal will be opened on April 18th by some 950 banks, inclusive of head offices and branches, in the metropolitan area.

It is now announced that the combined appeal will be for the fourfold purpose of reopening closed beds, meeting the higher costs of materials and re-equipment until prices become more normal, paying off the more pressing debts of

the London hospitals, and securing new subscribers. Steps are to be taken contemporaneously to develop new permanent sources of income by contributory and other schemes. There have already been several conferences with secretaries of general hospitals in London to discuss organization, and another conference will take place after Easter, at which more than a hundred hospitals in all will be represented, and following which the final arrangement will be settled. The Prince of Wales, who is President of the King's Fund, and with whose consent the appeal is being launched, has again cabled wishing it every success.

KING EDWARD'S HOSPITAL FUND.

The annual report for 1921 of the King Edward's Hospital Fund for London states that last year, even more than in 1920, the history of the Fund was bound up with the history of the crisis in hospital finance and the suggested remedies. The King's Fund was asked by the London regional committee of the British Hospitals Association to draw up two schemes, one for a combined public appeal for fresh money to meet present liabilities, and the other for the collection of regular contributions from the hospital-using classes. These two schemes were drawn up and circulated to the different hospitals, but it was not until January, 1922, that they were received back with a definite invitation to the King's Fund to go forward with both. The total receipts for the year amounted to £270,666, of which £18,007 was for capital and £252,659 general receipts. The amount distributed was £220,000, being an increase of £20,000 upon the ordinary distribution of 1920, and was made up as follows. Grants to hospitals—for maintenance, £198,425, for urgent extensions and improvements, £11,575; grants to consumption sanatoriums, £6,070; and grants to convalescent homes, £3,930. In distributing the increased amount available for maintenance the Fund took into the account the efforts made by the hospitals to increase income or reduce expenditure since the emergency distribution in July, 1920, and the issue of Lord Cave's report in June, 1921. Every eligible hospital and consumption sanatorium which applied for a grant was accepted and reported upon, as hitherto, by two of the Fund's visitors, one medical and the other lay. Since the foundation of the Fund a total net amount of £3,816,854 has been distributed, the average annual distribution during the whole period of twenty-five years having been £152,674.

CORONERS' REMUNERATION IN LONDON.

The London County Council granted, as from January 1st, 1921, a temporary addition of £300 to the salary of each of the four whole-time London coroners. This allowance was to continue until March 31st, 1922, or until the Council obtained parliamentary powers to pay fixed salaries to coroners. The attempt to obtain such powers has not been proceeded with, and an application has been made from the four coroners for an extension of the period for which the temporary addition is payable. In view, however, of the fall in the cost of living, and of other circumstances connected with the amount disbursed by coroners, the Council on April 4th decided not to extend the period. The salary of three of the coroners is £1,500 a year, and that of the other £1,186.

Scotland.

"FAITH HEALING" IN ABERDEEN.

A SERIES of remarkable scenes took place in St. Andrew's Cathedral, Aberdeen, on Monday, April 3rd, and the three following days, when Mr. J. M. Hickson, a lay missionary of the Scottish Episcopal Church, inaugurated his Scottish mission for the revival of the gifts of healing, with the approval of the bishop and clergy of the episcopal diocese of Aberdeen and Orkney. Prayer was offered on Monday for invalids unable to be present, suffering from such maladies as heart trouble, spinal curvature, rheumatism, tuberculosis, mental distress, and lupus; and then the laying on of hands was practised on 362 people, four-fifths of whom were women, who had come for healing. On Tuesday the laying on of hands was carried out on 702 men, women, and children, on Wednesday on some 1,400, and on Thursday on over 1,500. In several cases relief was said to have followed, as in that of a woman suffering from chronic swelling of the legs, of another woman who had deafness of many years' duration, and of a boy with polypus of the nose. It was afterwards stated that the boy had not had polypus of the nose, but had had an operation for obstruction of the nose followed by difficulty in breathing, and it was the difficulty in breathing which had been relieved. Mr. Hickson, who had returned to Britain after a world tour, has gone to Cork to carry on faith-healing mission work there.

RESEARCH IN ANIMAL BREEDING.

Professor Sir Edward Sharpey Schafer headed a deputation on March 5th from the Joint Committee of Research in Animal Breeding of Edinburgh University and Edinburgh College of Agriculture to the directors of the Highland and Agricultural Society, in Edinburgh, for the purpose of urging financial support towards the committee's scheme for research in animal breeding. Sir Edward Schafer said that the reason of the deputation for attending was not only for the sake of getting money; they wished also to get the sympathy and co-operation of agriculturists generally in this matter. They were supported by the Development Commission, and most of the money which they received came from the Development Commission. The Commission, however, had lately laid down the principle that they would only give money if other sums were raised locally. Breeding was a scientific problem, and the principles of that problem were being investigated now in a great many cases, and especially at Cambridge. There were certain definite principles which were being discovered and enunciated, which applied practically to all animals and plants as well. The object of the joint committee was to get those principles first of all determined, and if they had been determined, to investigate for themselves whether they were true, and to get breeders throughout the country to co-operate with them both by bringing their own problems before them, and, still more, by getting them worked out. There had been some attempt made at this, and Professor Cossar Ewart, in Edinburgh, had succeeded in improving very greatly the quality of the wool in certain sheep as the result of experiments and suggestions he had made to breeders. It had its utilitarian aspects, although he really stood on the scientific side. They were beginning to see how the discoveries in heredity were going to be applied to animal breeding, and that was really the object of the establishment of this joint committee. They had appointed a director, Dr. F. A. E. Crew, who was only too anxious to co-operate with practical breeders throughout the country in order to get the principles of breeding established.

GLASGOW LOCK HOSPITAL.

Dr. W. G. Dun presided at the annual meeting of the Glasgow Lock Hospital on March 28th. The report showed that the in-patients numbered 19,516, as against 20,486 in the previous year, while the average age of the patients was 17, as against 17½ in 1920. The financial statement showed that the ordinary expenditure was £7,930; taking ordinary and extraordinary accounts together there was a surplus for the year of £409. A number of improvements had been carried out conducing to the further efficiency of the hospital. In view of the fact that a number of maternity cases occurred in the hospital the directors had decided to have a properly fitted maternity room, and one of the wards was being altered and fitted as such. Dr. Dun said that there was one paragraph in the report which saddened him very much—the number of young children admitted as in-patients; no fewer than sixty-nine between the ages of 16 and 2 years were treated in the institution. This matter should have the close attention of the directors, and an endeavour made to put the law into force, and if possible to discover the criminals who communicated the disease to these young children. He would recommend to the medical staff and to their legal adviser the close following up of these cases.

THE third annual International Neurological Congress is to meet at the Salpêtrière Hospital in Paris on June 2nd and 3rd; the special subject for discussion is the symptoms of pituitary insufficiency. Drs. Roussy and Camus of Paris will deal with its anatomy and pathological physiology, and Dr. Froment of Lyons with its clinical and therapeutic aspects.

A SPECIAL sanitary committee of the Japanese Society of Zootechnics has reported that the conditions of milk supply were most unsatisfactory and made the following suggestions: (1) Improvement of the quality of the milk; (2) better dairy accommodation; (3) classification according to quality; and (4) control of the price by the direct supply of milk from the farms.

Correspondence.

THE HOSPITAL POLICY OF THE ASSOCIATION.

SIR,—The report of the Conference of Hospital Staffs shows that a considerable minority are opposed to the principle of taking for the medical staff a percentage of the money paid for maintenance "in whole or in part by patients as individuals." May I express a hope that this very contentious principle, of which even its supporters profess themselves ashamed, may cease to be a part of the policy of the Association?

Up till the present I have not seen or heard one valid argument advanced in its favour. The only reason given for its inclusion is that to omit it might lead to abuse. Now ordinary "hospital abuse" by patients who can afford to pay for treatment outside hospital is ruled out; in fact the clause rather cloaks individuals who so abuse hospitals, for under it they can claim that they are paying both the demands of the hospital for maintenance and of the doctor for treatment. The only other abuse suggested is that societies may hand over money directly to insured patients to pay their own hospital fees. Such a course surely could not be taken without detection at an early date. There would have to be a by-law of the society permitting this method of disposal of its funds, and the expenditure must appear on its balance sheet. The abuse must then soon become public and could immediately be checked. I must admit that the clause as it now stands has a logical symmetry and completeness, reminiscent of Schedule D, but recent events have taught us, in Ireland at least, to distrust a remorseless logic and to long for comfortable common sense.

May I say that when we attempt to make our policy operative it is on this point that we shall be most likely to come into conflict with hospital committees, who as regards other classes of patients are already almost convinced of the justice of our demands? It is on this point also that we are likely to lose the sympathy of the public, one of our greatest assets in the past, and we do not want to put into the mouth of some demagogue hereafter the gibe, "When the poor had scraped together a few shillings for the hospital that cured him this is the Association which was not ashamed to grab them." Further, it is on this point that we are most likely to fail in getting the cordial co-operation of the staffs of the larger hospitals, especially of the teaching hospitals. Dr. Cox made only the other week a fine appeal to consultants for their support to the Association. It is not likely to further that desirable end if we insist on lining their pockets, and thinly at that, at the expense of their pride or even of their prejudices.

We have declared our adhesion to the principle that our voluntary hospitals should be maintained. Most of them are admittedly on the verge of financial collapse. Does it seem consistent, does it seem politic, to take this opportunity of making a claim on contributions which have hitherto been regarded by everyone as earmarked for the maintenance of these hospitals and for that purpose alone?

One other question. We discussed the payment of hospital staffs in the Hospitals Committee when I was chairman some ten years ago, and we thought then that if hospital staffs were paid per capita, which is practically what our present policy amounts to, hospital committees, being mainly composed of business men, would go into the question on a financial basis, and in most cases would decide that a small whole-time salaried medical staff would be cheaper and quite as efficient. That we did not think would be for the advantage of the profession. Perhaps we were wrong, but was the fear groundless?—I am, etc.,

Belfast, April 3rd. R. J. JOHNSTONE.

SIR,—I have the greatest sympathy with Dr. Garratt and the difficulties he feels and expressed in his letter to you of March 24th, because till 1913 I held the same views as he has so frequently expressed.

The Conference clearly shows that conditions of hospitals differ greatly in the industrial area from those obtaining in London or in the rural areas. In industrial areas events have marched very rapidly in recent years in the manner of them obtaining their support, and it seems to me that when these methods of raising money become applied to other areas (as London is contemplating and as Oxford has recently started with such signal success that it will certainly be copied elsewhere) events will likewise move rapidly there too, bringing in their train conditions which will make the honorary staffs desire to modify their present views.

The British Medical Association scheme should be adopted to safeguard the position in the future, even if the staff hand back to the hospital the percentage they receive till these conditions arise.

The recent correspondence in the *Times* had been instructive—apart from the two excellent letters of the Chairman of the Hospitals Committee none have been published except those opposing the scheme—but there is an increasing feeling among the lay committees that the position of hospital staffs has not been just. As a proof of this I venture to send you one paragraph of the annual report of the Leicester Royal Infirmary for 1922, published yesterday:

"The honorary medical and surgical staff have continued to render loyal and devoted service to the institution in the treatment of the patients. Their active co-operation in the administration of the institution has helped the board to conduct the affairs harmoniously and smoothly. In recognition of their loyal services the board are particularly pleased to be able to announce that an arrangement has been made, by a unanimous vote of the board, that the honorary staff shall receive, in the shape of a percentage on certain receipts coming to the institution arising from national or municipal sources, a small recognition of their valuable services. The board are unhesitatingly of the opinion that this arrangement will cement the good relationship which has always existed between the honorary staff and the board."

I should have craved the hospitality of your columns ere this (as I much desired to enter the literary fray on this subject) had I not felt that the recording of *facts* when they had become accomplished was far more potent than the airing of my opinions.—I am, etc.,

Leicester, April 6th. ASTLEY V. CLARKE.

P.S.—Readers may have noticed an advertisement in the JOURNAL of April 1st by the Leicester Royal Infirmary containing the words: "The Infirmary has adopted the 'Staff Fund' policy as suggested by the British Medical Association." This is, I believe, the first such, and marks a new epoch in voluntary hospital management.

SIR,—The plea of Mr. Harman in favour of the plan to eject almost all patients from Class A is that, great extension of hospital services being inevitable, it is essential at once to "stake out a claim" on behalf of their medical staffs; that the modern workman scorns charity; that staffs who decline to accept the Staff Fund can give it back or apply it to altruistic purposes; and finally, that, having committed ourselves to the Leicester motion in 1920, we are bound to support it now.

The first essential in "staking out a claim," if you would not be warned off by the police, is to show good title to the ground, and this Mr. Harman conspicuously fails to do. There is no justification for the appropriation by medical men of funds collected by laymen from laymen for purely lay purposes, neither is there precedent in the recognized customs of medical practice for the claiming of commission on money spent on food, light, firing, and similar items of maintenance. Next, if workmen despise charity, they must found and maintain hospitals for themselves. Even the patients in the "private" class, unless they pay outside nursing home rates, are undoubtedly receiving charity. To pretend that the "tariff" class are not recipients of charity to a considerable degree degrades the hospital below the level of a provident dispensary, and its staff beneath the status of the more generously salaried officers of such an institution. The third argument is equally mischievous. If this money is honestly earned, it is impertinence to suggest what each man does with his own, while to give it back at once implies that it is not honestly earned, and places it in the same category as "conscience money" returned by persons guilty of cheating the revenue officer. I would ask Mr. Souttar, who now considers himself a robber of the rich, whether, when he has reduced the number of his free patients in hospital by 75 per cent., he proposes to make similar reduction in his private fees, and if not why not? While to Dr. Wyatt, who claims that all but the destitute should pay something to him, I would remark that even a "sixpenny doctor" would hesitate to exact a fee from one who could afford but 2s. 6d. a week towards the bare necessaries of life, and hitherto we have not placed ourselves on a lower plane than these.

As for the fourth argument of Mr. Harman, in 1912 the profession embarked on a mad adventure which led to a most humiliating defeat. Applying the argument adduced, because we were exceptionally foolish in 1912, therefore we should

behave similarly in 1922. Indeed there is risk of this. It is futile to attempt by threats of resignation to coerce lay boards of hospitals. All they need do is to reply, "Unlike you, we have nothing to lose, we will resign too." And what should we do then? Mr. Harman is singularly reticent on the question of how many boards have accepted the Leicester motion. The only board that has done so to my knowledge is that of the Leicester Royal Infirmary, whereon sit paid delegates of trade unions, who report to these unions. The possibilities of abuse of their power by paid representatives of a powerful and wealthy union are obvious moreover, this practice is the negation of voluntary management. I would far rather serve in State or municipal hospital than one liable to trade union control. The abolition of voluntary staff service must lead to paid managers, and State, municipal, trade union, or approved society control. Therefore I would beg all to consider carefully whether amendments on the lines suggested in my letter of March 11th[1] are not the utmost limit that any staff that would retain the title "honorary" can demand, or any self-respecting honorary lay board can be expected to concede. They are a compromise between the policy of the Scottish hospitals on the one hand and that of the British Medical Association on the other, are based upon principles intelligible to the public, and have therefore a reasonable chance of acceptance by laymen, which cannot be said of the Leicester motion.—I am, etc.,

Chichester, March 30th. G. C. GARRATT.

SIR,—At the conference of members of staffs of voluntary hospitals recently held, as also in your reference thereto in this week's issue of the JOURNAL, it is stated that recommendation 33 is the Leicester resolution several times previously affirmed.

From the point of historical accuracy, and to prevent confusion later, might I be allowed to point out that this recommendation is a Brighton resolution sent in in January last for consideration by the Annual Representative Meeting at Glasgow. This has evidently been brought to the notice of the Hospitals Committee, approved by that body and the Council, and in favour of it the Leicester resolution has been jettisoned.

The Brighton resolution (now No. 33) will have a rider attached to it which is very much alive, and will no doubt be placed before the Annual Representative Meeting in July. This Division considers the rider will meet many objections to No. 33. It is to the effect that when the staff of a voluntary hospital is advised that the payments by any patient are derived solely from that patient and that the financial position of that patient is such as to render him unable to pay more than the full cost of maintenance, the staff should refuse to accept any portion of these payments.—I am, etc.,

L. A. PARRY,

Hove, April 4th. Honorary Secretary, Brighton Division.

REDUCTION OF MEDICAL FEES.

SIR,—It was not to be expected that Dr. Ellis's proposal would be popular; nevertheless I believe it is proper that the profession should consider the question of the readjustment of the 50 per cent. increase in fees which was adopted in the latter part of 1919. It may be that on careful examination of the conditions it would not be found advisable to make any alteration at present; although the cost of living and of practice are still much more than 50 per cent. above pre-war rates, they are certainly less than they were when this advance in fees was made. Conditions in practice are now in so many ways altered from what they were before the war that it probably would be well for the profession to discuss the whole question of fees in private practice; these are probably in many instances even now too low; in other instances it is quite reasonable to think that they should be somewhat reduced. A large number of patients who in years past were willing and accustomed to pay fairly good fees now find it difficult to pay any fees at all, much less to pay 50 per cent. more. It must be recognized that where patients expected three or four visits they now often, because of the cost, object to more than one, and in many instances, if at all possible, do without any medical attendance, so that the economic value of the 50 per cent. increase is, to say the least, doubtful.

This reconsideration of fees, if and when it takes place, must have regard not only to the different classes of patients but to the different areas of practice, and the matter must be dealt with by the profession as a whole, for, although fees were at first raised in individual practices and in detached areas, the action of the Council in recommending a minimum increase of 50 per cent. made it practically the policy of the Association, and it might, and probably would, now be considered disloyal and hardly honourable for isolated individuals to lower their fees, or any part of their fees, without the general consent of the profession; in fact, if such action was started in even a few instances the results might well be disastrous. I am particularly anxious that the initiative should come voluntarily from the profession itself; if we were forced by public opinion to make any change the result could not be so satisfactory, and our position would certainly not be dignified.

There is ample time for any Division to consider this question and lay proposals before the Representative Meeting in July.—I am, etc.,

Bradford-on-Avon, April 8th. CHAS. E. S. FLEMMING.

ROUTINE PELVIMETRY IN ANTE-NATAL CASES.

SIR,—I have read Dr. Foss's letter of April 8th, criticizing mine of March 25th, with much interest. Dr. Foss "views with surprise" the fact that I rely principally on the external conjugate, and states that he uses the intercristal and interspinous measurements to determine the variety of pelvis present. I have followed more or less carefully the English literature on pelvimetry for the last twenty years, and I cannot remember a single modern authority upholding Dr. Foss's opinion; in fact, most experts agree that the intercristal and interspinous measurements are "of little value—in fact, scarcely worth the trouble of recording. . . .

"The more important measurements are those of the true pelvis, and of these the external conjugate probably gives the most information" (Dr. A. W. Bourne, of Queen Charlotte's and St. Mary's Hospitals; see BRITISH MEDICAL JOURNAL, January 18th, 1919). On the other hand, it is quite possible that I have not seen some important papers on this subject upholding Dr. Foss's views, and if so, I should much value his reference to them. If, on the other hand, Dr. Foss bases his assertion solely on his own experience I am afraid we shall have to agree to differ. Dr. Foss has the advantage over me in that his medical training is very recent and hence modern, and if he has been taught to rely on the intercristal and interspinous measurements I should be much obliged if he would state his authority. The subject is one of great interest and importance.

With regard to the estimation of the diagonal conjugate, though I always seek to obtain it, I rarely succeed, as in the ordinary pelvis it measures 4¾ inches, and as Dr. Herman said, "the finger is only about 3 inches long, and if you get near the promontory so much pain is caused by the knuckles pressing up the perineum that the patient will probably object" (BRITISH MEDICAL JOURNAL, June 30th, 1906).—I am, etc.,

Woking, April 8th. R. THORNE THORNE.

THE CLOTHING OF NATIVES IN RELATION TO TUBERCULOSIS.

SIR,—In reply to Dr. J. S. Pearse's inquiry in the JOURNAL of March 25th, asking if there are any medical reports regarding the wearing of clothes by aboriginal natives being a cause of tuberculosis among them, I would refer him to the report of the Commission appointed by the Governor-General of South Africa to inquire into the prevalence and spread of tuberculosis in South Africa (1912–14), of which I was chairman. I believe a copy of the volume is to be found in the library of the British Medical Association. But in any case I shall be pleased to lend the book. The belief that the use of European clothing is partly responsible for the spread of tuberculosis among the native races is fairly widely held by those Europeans who have an intimate knowledge of the raw native in his kraal. Its influence, however, can only be of the nature of a predisposing or contributory cause. The primary cause of tuberculosis among aboriginal natives is infection by the European, but once introduced into a native community it spreads rapidly on account of the unhygienic habitations and the extremely dirty commensal habits of the native, and also because of his great susceptibility to the disease. His susceptibility is probably due both to an inferior racial power of resistance, and to the absence of that acquired protection which the great majority of Europeans obtain as the result of mild tuberculous infections (often bovine) in very early life. In considering the effect of

[1] BRITISH MEDICAL JOURNAL, p. 414.

clothes-wearing, the fact must not be overlooked that European clothing usually connotes the association of the native with Europeans, and also the adoption of some of the European's habits and vices, among which are alcoholic intemperance, the adoption of unsuitable food, and unhealthy occupations. Nevertheless, in itself the wearing of clothing may influence the spread of tuberculosis, because (*a*) it is generally cast-off European clothes; (*b*) it is usually of unsuitable kind; (*c*) it is worn continuously without change, often day and night, and is, generally speaking, very filthy; and (*d*) no difference in dress is made for variations of temperature, nor is it removed when, as often happens, it becomes soaked with rain or sweat.—I am, etc.,

Torquay, March 28th. A. JOHN GREGORY.

A DIPLOMA IN TUBERCULOSIS.

SIR,—Evolution in medical practice is marked by a growing tendency towards specialization. At one time it was considered sufficient to have physicians, surgeons, and general practitioners. Later alienists, obstetricians, and gynaecologists detached themselves, followed by oculists, aurists, and throat and nose, skin, rectal, urinary, venereal, and other specialists, all covered by their university or college diplomas. As time went on such diplomas were considered insufficient, and extra ones, such as the diplomas in public health and tropical medicine, were added. Now it is proposed to have still another, a diploma in tuberculosis. Where is specialization to end? It is surely enough to have departmental specialization without proceeding to specializing in single diseases. Every consulting physician is, or ought to be, a specialist in tuberculosis, and easily know all that is known about it. Also, it would soon be found necessary to specialize still further. There would arise specialists in pulmonary tuberculosis, in tubercle of the brain and spinal cord, in abdominal, osseous, glandular tuberculosis, etc.

The medical treatment of tuberculosis is extremely unsatisfactory. Fresh air and the *vis medicatrix naturae* seem to be the only reliable agents. The hypodermic injection of auto-serum has been found of benefit in surgical tuberculosis and may be found equally useful in medical cases. It seems futile to devote time and effort to attempted cure while at least one known and preventable cause is neglected: very many cases of tuberculosis, especially of the abdominal type, are due to the ingestion of milk secreted by cows suffering from tuberculosis. It is the imperative duty of the State to forbid the sale of milk from tuberculous cows. All cows ought to be examined by veterinary surgeons, and only those certified free from tuberculosis should be permitted to supply milk for human consumption.

If another diploma is really called for, one in parasitology should commend itself. It may be too sweeping an assertion to make that all disease is due to the action of parasites, but it is a fact that the part which parasites play in the genesis of disease is not, by any means, fully realized. If all diseases due to parasites were excluded from medical works the latter would be extremely short and pleasantly cheap, while treatises on tropical diseases would be non-existent.—I am, etc.,

Driffield, E. Yorks, March 26th. A. T. BRAND, M.D.

SLIPPING RIB.

SIR,—In the case reported under this heading by Dr. H. K. V. Soltau (BRITISH MEDICAL JOURNAL, April 1st, 1922, p. 516), there was no displacement of the tenth costal cartilage, the pain being localized to the tip of the eleventh rib. It might likewise be worth recording that, in the early nineties, I had under observation several out-patients, chiefly females, suffering from "pain in the side," and in each of them I was able to trace it to the tip of the tenth or of the eleventh rib. In the absence (so far as I knew) of any mention of this clinical condition in our medical literature I applied to it the name "rib-tip tenderness." This was a strictly symptomatic designation, not limited to any one of the different etiological varieties yet applicable to all of them. As such it might still serve a useful clinical purpose as a reminder to examine the costal cartilages in all cases of pleurodynia, some of which are by no means easy to identify conclusively as of pleuritic, gastric, or cardiac origin, or as purely nervous or "neurotic." A systematic examination for undue rib tenderness could hardly fail to detect the abnormality of an unattached tenth cartilage and of its liability to develop the condition of slipping rib.—I am, etc.,

London, W., April 3rd. WILLIAM EWART.

DIABETES MELLITUS: A SUGGESTION.

SIR,—Having been a sufferer from diabetes mellitus for over twenty years (since about 20 years of age), I have naturally taken great interest in the subject, especially in new lines and treatment. During these twenty years science has much advanced, many discoveries been made, and many theories advanced and applied, only to fail in practice.

That most in vogue at the moment—the fasting treatment—seemed to offer much promise, but when examined carefully and its results compared with the ordinary cases regulated by diabetic dietary, it will be found that the final result is about equal as far as time of death is concerned,[1] especially in cases that have been treated for some time by ordinary methods. It may therefore be asked why a patient should be subjected to continued underfeeding and his life thus made miserable. Better admit the failure of the modified Allan treatment at once and inform all sufferers. To have a sugar-free urine is excellent from a scientific point of view, and speaks volumes for the skill displayed in London hospitals to obtain this result. But how is it obtained? Not by correct diagnosis, for the cause of diabetes mellitus has yet to be discovered; therefore sugar-free urines have been established by haphazard lucky shots.

The chemistry of the blood and urine will serve to differentiate the various forms of diabetes and settle the question whether the pancreas is affected or not. All this is estimable, and is gradually narrowing down the number of probable causes.

Recently a much more hopeful line of investigation has arisen—that is, the bacteriological. The right line was struck by Sir W. H. Willcox when he said that the true cause was damage to the pancreas by some toxic agent. As I do a little bacteriological work myself this interests me immensely, and I hope some day to hear that the germ causing this malady has been isolated and a suitable antigen discovered. I live in expectation of this. Staphylococci, pyorrhoea (*Treponema mucosum*, Noguchi), *B. coli*, and other well-known microbes can be dismissed as only occasional causes. The possible line of investigation, to my mind, should be to search carefully the ports of entry to the system, by way of the alimentary tract more especially, and to cultivate all bacterial flora of the stomach, duodenum, jejunum, pancreas, and colon. The specimens should be obtained aseptically at operation or immediately after death, using many kinds of media, classifying all bacteria found and their proportions, special attention being paid to unknown varieties, their isolation and inoculation into animals. This appears to me to be the most suitable way of seeking to discover the true cause of diabetes mellitus. It is one upon which research is only just beginning.—I am, etc.,

Bognor, Feb. 18th. J. F. REY.

AFTER-RESULTS OF COLECTOMY.

SIR,—In taking part in the discussion which followed the reading of Sir Berkeley Moynihan's paper on the after-results of colectomy, I made certain statements which are clearly open to misinterpretation.

In criticizing the inadequate statement of results as "good," "fair," or "bad," the last person I had in mind was Sir Berkeley himself, for in his communication he had given all the data which the most captious of critics could demand. I need only add that I am indebted to Sir Berkeley Moynihan for giving me most of the opportunities I have had of investigating the pathology of intestinal stasis, and that I have the utmost admiration for his work.—I am, etc.,

ARTHUR KEITH.

Royal College of Surgeons of England, April 8th.

PROSTATIC ENLARGEMENT.

SIR,—In his letter on prostatic enlargement, published in the BRITISH MEDICAL JOURNAL of April 1st (p. 539), Mr. T. E. Hammond utters a warning against the adoption of such palliative measures as organotherapy when once the symptoms and signs of enlargement are present. He rightly states that the existence of a relationship between enlargement of the prostate and some change in the endocrine system is too problematic to form a basis of treatment by organotherapy, and that a course of organotherapy might be tried in early cases, but not when once an operation is indicated.

Whilst agreeing entirely with the tenor of Mr. Hammond's remarks, I do not think that his fears lest palliative measures

[1] P. J. Cammidge, BRITISH MEDICAL JOURNAL, October 29th, 1921, p. 708.

should be substituted for radical ones are justified, or that my remarks on the relationship of the prostate to the endocrine glands are likely to encourage attempts at organotherapy when operation is indicated. Suprapubic prostatectomy is such a satisfactory and successful operation that, if anything, the tendency is to have recourse to it in cases in which it is not strictly indicated, rather than to neglect it in those in which it is.

When the history of prostatic surgery comes to be written the same criticisms will be levelled at the operation of suprapubic prostatectomy that must be levelled at other successful operations, such as gastro-enterostomy. The very success of the operation has resulted in its having been employed at first without that discrimination and judgement that have afterwards been attained.

I quite agree with Mr. T. E. Hammond's remark that palliative measures should never be employed "when once operation is indicated." The point on which we may not entirely agree is as to when an operation *is* indicated. Moreover, when once operative measures are decided upon, is enucleation necessarily the only procedure? Although the number of cases suitable for the adoption of such partial operations as "forage" is a small one, I am convinced that these measures have a real, if restricted, place in prostatic surgery. Mr. Hammond does not mention such procedures in his letter, but I take it that he does not include them in what he terms palliative measures.—I am, etc.,

KENNETH M. WALKER.

London, W., April 8th.

RESTRICTION OF INFLUENZA EPIDEMICS IN SCHOOLS.

SIR,—In their comments upon our notes on "The restriction of influenza epidemics in schools by the use of local prophylactic vaccines," Drs. Cameron and Billing have, we think, made too much of the idea that we claim to have proved the beneficial results of the administration of a vaccine by the means of a single set of figures submitted, whereas we have ourselves devoted a paragraph in our short article pointing out the difficulties of a fair interpretation of our own statistics.

We hope that, before long, you will allow us space in your columns to publish another article, which we have now in preparation, dealing with the same question, which we consider is far too important and too difficult to be settled except by the collection and comparison of statistics taken under different circumstances and covering a larger range of observations.—We are, etc.,

A. I. SIMEY,
J. W. H. EYRE.

Rugby, April 5th.

The Services.

ROYAL NAVY MEDICAL CLUB.

THE annual dinner of the Royal Navy Medical Club will take place this year at the Trocadero Restaurant (Balmoral Room), on Thursday, April 27th, at 7.30 for 8 p.m. Members who wish to be present are asked to inform the Honorary Secretary, Royal Navy Medical Club, 68, Victoria Street, S.W.1, not later than seven clear days before that date.

TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon the following officers under the terms of the Royal Warrant, October 13th, 1920:—*Royal Army Medical Corps:* Colonel William Coates, C.B., C.B.E., V.D., Honorary Colonel, East Lancs Division; Colonel E. A. Wraith, C.B.E., D.S.O., A.D.M.S., North Midland Division; Lieut.-Colonel C. I. Ellis, C.M.G., D.A.D.M.S., 43rd (Wessex) Division; Lieut.-Colonel P. G. Williamson, M.C., attached 5th Battalion West Yorkshire Regiment (ret.); Major Angus MacGillivray (ret.); Major T. H. Richmond, O.B.E., attached North Midland Brigade, R.F.A. *Sanitary Companies:* Captain J. Grounds, 1st London Sanitary Company.

DEATHS IN THE SERVICES.

SURGEON-MAJOR ISAAC NEWTON, Bengal Medical Service (retired), died at Cheltenham on March 28th. He was born on January 9th, 1838, the son of Dr. Isaac Newton, of Knaresborough, and was educated at Leeds and Paris; he took the M.R.C.S. in 1859, and entered the I.M.S. as assistant surgeon in the same year. He became surgeon-major in 1873, and retired in 1877. He served in civil employ in the Punjab, where he was successively civil surgeon of Dalhousie and superintendent of vaccination. He was the author of a small work on vaccination.

Obituary.

SIR PATRICK MANSON, G.C.M.G., M.D., LL.D., F.R.S.,

Consulting Physician, Seamen's Hospital Society; late Medical Adviser to the Colonial Office.

WITH deep regret we announce the death, on Sunday last, April 9th, of Sir Patrick Manson, whose name is closely associated with one of the greatest advances ever made in medical science. He was the son of John Manson of Fingask, Aberdeenshire, where he was born on October 3rd, 1844. He was educated at Edinburgh and at the University of Aberdeen, where he graduated M.B., C.M. in 1865 and M.D. in the following year. He spent the early part of his professional life in the East. After practising for some time in the island of Formosa he went to Amoy, one of the chief ports of China; there he was in charge of a large native hospital. Later he moved to Hong-Kong, where he took a leading part in the foundation of a College of Medicine for the Chinese. Besides lecturing on medicine he filled the office of dean of the institution, and had a great influence on its development. On his return from the East he settled in London. In 1890 he became a Member of the Royal College of Physicians, and was elected a Fellow in 1895. He joined the medical staff of the Seamen's Hospital Society in 1892; when he retired from active service in 1912 he was appointed consulting physician, and retained his position as senior teacher in the London School of Tropical Medicine.

Very soon after his arrival in the East, Manson had his ignorance of tropical diseases forcibly brought home to him. In an address delivered at St. George's Hospital, and published in the BRITISH MEDICAL JOURNAL of October 9th, 1897, he gave an account of these unpleasant but enlightening experiences. When he went to Formosa he knew nothing about beri-beri save its name, and naturally failed to recognize the disease when it came before him. The patient was a Chinese clerk employed in a European firm. Manson found him sitting propped up in a chair, short of breath, dropsical from head to foot, with a cardiac bruit, irregular tumbling action of the heart, and a feeling of distress in the chest. Thinking the case was one of heart disease he prescribed what he considered suitable remedies, but when he called next day expecting to find an improvement, the patient was dead. Some years later he saw a number of Chinese soldiers in hospital suffering from what appeared to him to be locomotor ataxy. He declared that although there was no immediate danger to life they would not recover. In defiance of this prognosis some of them in a short time were walking about and others had even returned to their military duties. A good many, however, died suddenly just like the Formosan patient. Manson found no help in his books. He noticed that, whereas some of the patients were wasted to shadows, others were swollen and oedematous. In most of them the muscles, especially those of the calf, were tender. As the Chinese are very fond of pork he thought he might be dealing with an outbreak of trichinosis, but he found no trichinae in the muscles. It was not till months had elapsed and a good many deaths had occurred that he recognized that he was confronted with an epidemic of beri-beri.

In Formosa he encountered elephantiasis, but could find no satisfactory solution of the problem it presented. Later in Amoy he saw many more forms of the disease, but the riddle of causation still remained unanswered. During a visit to London in 1874 he heard for the first time of the discovery made by Timothy Lewis in 1872 that in the blood of a proportion of the inhabitants of certain districts of India was to be found an organism which he called the *Filaria sanguinis hominis*. These parasites Lewis had met with in more than one case in association with elephantiasis or elephantoid diseases. On his return to China in 1876 Manson discovered that these parasites were present in some districts in 10 per cent., and in others in 50 per cent., of the population, whilst in some places they were not found at all. As the organism showed no evidence of growth while in the blood, or any features warranting the supposition that it was capable of reproducing itself, the inference was that it was an immature form. After much search he found that this was the case, although the discovery had been anticipated by Bancroft as well as by Lewis. The problem how the organism gained access to the human body had next to be solved, and it occurred to Manson that as it was never found in any of the natural discharges, it could not escape spontaneously so as to pass from one man to another without the aid of a carrying agent capable of penetrating the skin and absorbing the blood. It struck him that

the most likely agent in the translation of the filaria was the mosquito. To determine the frequency with which that parasite was present he examined the blood of a thousand natives, with the help of two Chinese medical students he trained for the task. These assistants were occupied in hospital, one working in the daytime, the other at night. While the one who worked at night brought many positive results, the other seldom found a filaria. Investigating this point, Manson found that in ordinary conditions of health the organisms appeared in the blood about sunset, gradually decreasing towards morning. This filarial periodicity suggested an adaptation of the habits of the parasite to the nocturnal habits of the mosquito, and Manson set to work to find out whether the filaria was ingested with the blood which the mosquitos had imbibed, and, if so, what changes occurred; he was able to see that, so far from killing the filaria, the digestive juices of the mosquito seemed to have stimulated it to fresh activity. After many months of work he succeeded in tracing the parasite through the stomach wall into the abdominal cavity and thence into the thoracic muscles of the mosquito. During this passage the filaria increased enormously in size and developed a mouth, an alimentary canal, and sexual organs. Manson conjectured that when the mosquito died the little organism it contained escaped into water and by that path reached the human body. With better appliances he tried later on in England to trace the exact route by which the filaria left the mosquito. He obtained infected insects from Dr. Bancroft of Australia, and Dr. Low of the London School of Tropical Medicine succeeded in making sections which showed the filaria in the act of passing through the proboscis of the mosquito and entering the body through the bite. It was thus proved that certain kinds of mosquito are carriers of this filaria and are agents in transmitting the diseases to which this parasite gives rise. By systematic examination of the blood of natives of many tropical countries Manson discovered blood-haunting larval filariae of three other specifically distinct nematodes—namely, *Filaria loa*, *F. perstans*, and *F. demarquayi*. The embryos of the *F. loa*, the eyeworm of tropical West Africa and its hinterland and the cause of the "Calabar swellings" so common among Europeans in those regions and so often mistaken for erythema nodosum, resemble very closely those of *F. bancrofti*. They differ, however, in minute anatomical details and also in having an exactly opposite periodicity; they enter the general circulation in the daytime and disappear from it at night. This circumstance led Manson to suggest that the liberating and intermediate host must be a biting insect such as the mangrove fly (*Chrysops dimidiata*). This suggestion was proved to be correct by Leiper.

This pregnant discovery of the transmission of an agent of disease by intermediary agents soon led to developments of the highest importance to mankind. For thousands of years malaria had levied a heavy tribute of human life and turned many a fertile and thickly peopled region in India, Africa, and Europe into a barren wilderness. In his *Malaria*, published in 1827, Macculloch traced the influence of the fell disease in the degeneracy of the race in Italy, Sicily, France, Spain, Holland, and America, and W. H. S. Jones, in his *Malaria and Greek History* (1909), contended that it played a large part in bringing about the decadence of Greece. It was the great obstacle to the colonization of tropical territories by the white man. To the discovery of the cause of this scourge Manson applied the knowledge of the conveyance of disease by insects gained from his researches on filaria. The theory of the insect-borne origin of paludal fever was not altogether new, but the faint adumbrations of modern doctrines by old writers had been forgotten, when, in 1880, Laveran announced that, working in Algiers, he had found the parasite which is the cause of malaria. The importance of the discovery was not appreciated at the time, nor was the nature of the organism determined or the significance of its various phases ascertained. Laveran's statements were, however, confirmed by Richard in Algiers, Osler in America, and in Italy by Golgi, who worked out the morphological features of the tertian and quartan parasites and the schizogony or the sexual phase. Further advances in our knowledge of this part of the life-cycle of the malarial parasite were made by Celli and Marchiafava, but here for the time progress ceased. Except as far as it afforded an invaluable guide in diagnosis and treatment Laveran's discovery remained barren for more than a decade. It gave no clue to prevention; it did not explain how infection was conveyed nor throw light on the peculiar geographical and local distribution and limitation of the disease. Malaria continued to be the dragon which guarded the golden apples in the garden of the Hesperides. To slay this monster Manson came forth armed with the spear of knowledge and with unconquerable enthusiasm. In a paper on the nature and significance of the crescentic and flagellated bodies in malarial blood published in this JOURNAL on December 8th, 1894 (p. 1306), he pointed out how closely parallel the conditions of the evolution of the filaria are to those of the plasmodium. At that time the so-called "agony forms" of the parasite were generally looked upon as indications of a state preceding the death of the parasite in blood withdrawn from the body. Manson, on the other hand, reasoned that as the malaria parasite, like the filaria, was incapable of leaving the body by its own effort, being enclosed in a red corpuscle, therefore some blood sucking animal which frequents the haunts of malaria might be the agent in transmission. For epidemiological as well as biological reasons he became convinced that the mosquito was the intermediary of the malaria parasite as he had shown it to be of the filaria. He was unable for want of material to test the hypothesis, and he could not afford to spend the necessary time in a malarious country. In the hope that someone with better opportunities might take up the search, he published a summary of his views in the BRITISH MEDICAL JOURNAL of December 8th, 1894. A sum of money was promised by the British Medical Association to enable him to go to British Guiana on condition that the Royal Society would grant a similar amount, but the plan was not carried out, and the task passed on to the capable hands of Major (now Sir) Ronald Ross, who began to work on the lines of the theory on his return to India in 1895. At first Ross had bad luck in some of his stations and at one time had to give up the search. Manson suggested that in default of human subjects he might work out the life-history of the corresponding parasites in birds which closely resemble those in man. Ross succeeded in tracing the bird parasite into the mosquito's stomach, thence into the salivary glands, down the proboscis, and back again into the bird. It was then proved that the same thing applied to the human being, and after Ross had established this Grassi, Bignami, and Bastianelli showed by what species of anopheles in Italy malaria could be communicated to man. Italian scientists also succeeded in communicating malaria to man by mosquitos which had fed on a person suffering from malaria. After a certain time these insects were fed on other men free from malaria and these in due course got the disease. But the theory met with opposition and ridicule, and for a time it seemed to be destined to the fate of Carlos Finlay's discovery of the part played by *Stegomyia calopus* in the causation of yellow fever. The neglect of that suggestion cost many thousands of lives in Havana alone between 1881, when the discovery was announced, and 1901, when it was confirmed by Reed, Carroll, Agramonte, and Lazear, and measures founded on it put an end to yellow fever in that haunt of the disease. The story of the work done in India by Ross in the face of official indifference and active obstruction, how he overcame all obstacles and brought his quest to a successful tissue, is known to all the world. The story was told by Manson in the third of the Goulstonian lectures on the life-history of the malaria germ, delivered before the London College of Physicians in March, 1896, and published in this JOURNAL on March 28th, 1896 (p. 775).

In a discussion at the Geographical Society in 1898 on the possibility of acclimatization of Europeans in tropical countries (BRITISH MEDICAL JOURNAL, April 30th, 1898, p. 1168), Manson stated that 99 per cent. of tropical diseases are caused by germs which in their extracorporeal stage are very vulnerable. In the Huxley lecture, delivered at Charing Cross Hospital in the same year, he said that besides malaria he could adduce many illustrations of the conveyance of disease by intermediary agents both from human and from veterinary pathology; he instanced yellow fever, African tick fever, trypanosomiasis, filariasis, and certain kinds of spirochaetiasis. Manson held that we were justified by analogy in conjecturing that the same principle also applied to many similar protozoal germs whose life-history had not yet been fully determined.

Ever since his return from the East Manson had pleaded for the provision of systematic instruction in tropical diseases. Some attempts had, indeed, previously been made here and there to supply teaching in tropical pathology. In the plan of a medical school drawn up by Dr. Benjamin Golding, the founder of Charing Cross Hospital, in 1822 the necessity for lectures on tropical diseases is expressly mentioned. In

1826 Dr. Felkin established in the Edinburgh Extra-Mural School a course of lectures on diseases of the tropics and climatology. It is claimed for Edinburgh that this was the first regular course of lectures of the kind delivered at any medical school in Europe or America. On Felkin's retirement the course was continued by Dr. Andrew Davidson. In February, 1899, the University of Edinburgh established a lectureship in diseases of tropical climates, and provided for a course of practical instruction in parasitology and bacteriology. In 1899 a similar lectureship was established in Aberdeen, and was held by Dr. G. A. Maconochie, who had for twenty-five years been connected with the Grant Medical College of Bombay. The first lectureship on tropical medicine in London was established at St. George's Hospital in 1895; Manson was appointed to the post, which he held till 1908, when he resigned. In 1898 a similar lectureship was instituted at Charing Cross Hospital, and to it Manson was appointed. All this marked some degree of progress, but it was inadequate for the purpose. Manson felt that what was required was a school fully equipped with a teaching staff, a hospital, and laboratories for practical instruction and research. Many difficulties had to be overcome, but fortunately Manson became medical adviser to the Colonial Office, and in that capacity was brought into association with Joseph Chamberlain, then Secretary of State for the Colonies, a statesman of large vision who perceived the vast importance of medicine in colonization. Through his influence with Chamberlain the scheme which Manson had so much at heart was brought to fulfilment. He had already given an outline of it to Mr. (now Sir James) Michelli, Secretary of the Seamen's Hospital Society, in 1896, and on April 27th, 1898, Manson was able to announce to the Geographical Society that an endeavour was being made to establish a school for the training of doctors who intended to practise in our tropical colonies. In the following year came the realization of his dream. With the whole-hearted co-operation of Chamberlain the London School of Tropical Medicine was opened at the Victoria and Albert Docks on October 2nd, 1899. An account of its foundation and development was given in the BRITISH MEDICAL JOURNAL of February 7th, 1914 (p. 321). A school on similar lines had been established at Liverpool in April, 1899, under the auspices of the late Sir Alfred Jones. The generous rivalry between the two schools has been a powerful factor in the progress made in this country in the knowledge of tropical diseases and the means of combating and preventing these scourges. They have been a model for similar institutions in various foreign countries; in France schools were founded in Paris, Bordeaux, and Marseilles. An Institut für Schiffs- und Tropen-krankheiten was founded in 1900 at Hamburg, and a Belgian State school was established at Brussels in 1906. Others have been established in India, Italy, and the United States.

Not only did Chamberlain take an active part in the foundation of the school, but he placed a sum of money at Manson's disposal to enable him to bring his malaria theory to a conclusive test which should carry conviction to every reasonable mind. With this object he sent out to the Roman Campagna, the most malarious part of Italy, a small expedition, the members of which undertook to live among the fever-stricken population, and to expose themselves all day to the sun, wind, and rain, and the emanations from the soil, retiring for the night before sunset to a special house where they were completely protected from mosquito invasion by wire gauze netting. A complementary experiment was to be made on getting mosquitos which had fed on malarial patients sent from Rome, and making them bite persons in London who had never had malaria. Both experiments were entirely successful. Drs. L. W. Sambon and G. C. Low and an artist, Mr. A. J. Terzi, with some friends lived in the Roman Campagna in the height of the fever season for many months without contracting the disease. On the other hand, a son of Manson and a laboratory assistant at the London School of Tropical Medicine, who allowed themselves to be bitten by the imported mosquitos, had fever two weeks afterwards, and the parasites were found in their blood. This was the *experimentum crucis* which finally settled the question of the causation of malaria.

Manson's career is a striking illustration of the good work that can be done amidst the difficulties and worries of general practice by an energetic man away from any scientific centre with nothing but his own enthusiasm to encourage him and with only the most rudimentary appliances to work with. In the early part of his career, besides the struggle for existence, he had a tropical climate to contend with. At home he had more formidable difficulties to encounter in the discharge of his mission as the apostle of what was a new gospel not only in medicine but in the development of the empire. He met with chilling indifference and even active hostility. But, happier than most scientific pioneers, Manson lived to see the triumph of the cause which he had so strenuously advocated, and the school of which he was the true begetter grow before his eyes from small beginnings to an institution of imperial importance.

One of his last public appearances was when he visited the school in its new building on January 20th last to receive a portrait subscribed for by a large number of past and present students of the school and other friends at home and abroad. At the same time it was announced that money had also been subscribed for a medal bearing Manson's portrait to be awarded annually to a pupil of the school distinguishing himself in clinical medicine. Manson was an inspiring teacher and had a racy, virile style that impressed students and attracted many distinguished visitors from foreign countries. He was popular with his pupils and was generous in help to all who sought it. He contributed largely to the literature of his special province. His principal work was *Tropical Diseases: Manual of Warm Climates*, published in 1898, republished twice in 1900, twice in 1903, and again in 1917. It was translated into French by Maurice Guibaud and Jean Brengues in 1904. In conjunction with Daniels he wrote the articles on beri-beri, and, in collaboration with Shipley and Sandwith, those on parasitic worms, sprue, latah, and ainhum in Allbutt and Rolleston's *System of Medicine* (1907), and articles on *Filaria sanguinis hominis*, etc., in *Quain's Dictionary of Medicine*. In 1896 he delivered the Goulstonian lectures at the College of Physicians, taking as his subject the life-history of the malaria germ outside the human body; the course was published in the BRITISH MEDICAL JOURNAL. The introductory address at St. George's Hospital, in which he urged the need for the systematic teaching of tropical pathology, was delivered in 1897; and later on (1905) he gave also the Lane lectures at San Francisco, the subject being tropical diseases.

Among Manson's other writings are papers on leprosy and other subjects in the *Medical Reports Chinese I.M. Customs Gazette* from 1871 to 1884; he wrote many papers on the *Filaria sanguinis hominis*, and finally brought all his results together in a monograph on the *Geographical Distribution, Pathological Relations, and Life-History of Filaria sanguinis hominis diurna and of Filaria sanguinis hominis perstans in connexion with Preventive Medicine* (1893). One of his last contributions was an important survey of recent discoveries in tropical medicine and hygiene, which he contributed to the British Medical Association's volume, *British Medicine in the War, 1914–17;* it was also published in the BRITISH MEDICAL JOURNAL of July 28th, 1917. Manson's scientific output was large and varied. But perhaps his best monument is the school which is the concrete expression of the ideas of which he was the fervent apostle.

Honours came in abundance to Manson. In 1900 he was made a C.M.G., in 1903 he was advanced to K.C.M.G., and on his retirement from the post of medical adviser to the Colonial Office in 1912 the King bestowed on him the honour of Knight Grand Cross of the Order "in recognition of his eminent services in connexion with the investigation of the causes and cure of tropical diseases." His own University of Aberdeen conferred on him the honorary degree of LL.D. in 1886, and the University of Oxford that of D.Sc. in 1904. He was elected a Fellow of the Royal Society in 1900. He was also a foreign Associate of the Paris Académie de Médecine. In 1911 an international committee was formed for the purpose of presenting him with a gold medal bearing his effigy. The medal, which was designed by Dr. Paul Richer of Paris, who is eminent as an artist as well as a physician, was presented to him at the International Medical Congress held in London in 1913.

In 1875 he married Henrietta Isabella, daughter of Captain J. P. Thurburn, R.N. By her he had two sons—one of whom, Philip Thurburn, a member of the medical profession, died in the East in 1902—and three daughters, one of whom married Dr. Philip Manson-Bahr.

Manson was a devoted disciple of Izaak Walton, and at one time used to fish in Scotland every year. In recent years he deserted the rivers of his native land for Ireland and took a place at Clonbur, co. Galway, where he indulged his sport to his heart's content. After his retirement from practice he retained his interest in the Tropical School and usually spent

part of the winter in London. For many years he had been crippled by gout and rheumatism, but his mind remained vigorous.

Dr. G. C. Low writes: By the death of Sir Patrick Manson tropical medicine loses one of its main pillars, and it will be hard to fill the empty place. He has been rightly termed the pioneer and founder of modern tropical medicine. Tropical medicine and its study existed, of course, before Sir Patrick's day, and much valuable work had been carried out, especially in India, on the peculiar diseases prevalent there, but no one, apart perhaps from members of the services, quite realized its importance and the necessity of special teaching for all young men proceeding abroad. Sir Patrick learned the lesson himself when working in Formosa and Amoy as a young man. Many times in after-life he confided to the writer how he would have valued a course on tropical medicine before going to the East, what hours of time and labour it would have saved him, and how much more work he could have accomplished. Yet—and this is where the stroke of genius comes in—he overcame all difficulties, mastered the subject by himself without any teaching, and by his wonderful work on the mosquito as the host of *Filaria bancrofti* laid the foundation of tropical entomology, which ultimately was to lead to the final elucidation of the etiology of malaria, yellow fever, and other insect-borne diseases. The long, tedious hours spent in study and research by himself in China were never forgotten, however, and when he returned to England he set about putting tropical work on a proper scientific basis, including the formation of special schools for its study. The usual opposition to any innovation was at once forthcoming, but here again the man showed his strength and overthrew all obstacles, finally establishing the London School of Tropical Medicine, to which he devoted the rest of his life. From a small beginning the school gradually grew, special departments of entomology, protozoology, and helminthology were added, so that everything scientific, appertaining in any way to tropical medicine, should be taught and explained. Sir Patrick lived long enough to see the fruition of his life's work; the school never looked back, the number of students increased steadily, diplomas in tropical medicine were started, and at the present moment, especially after the move to town to its new site at Endsleigh Gardens, its activities are greater than ever, only the lack of money preventing the starting of biochemical and other new departments. May I, as one of Sir Patrick's oldest pupils, mention some personal characteristics? Well do I remember my first interview with him. After some talk and questioning as to knowledge of tropical medicine, a subject was laid down for study—namely, the examination of a series of filariated mosquitos sent by Dr. Bancroft the younger from Australia; the parting admonition, happily not required, was, "Remember, this must not be a dilettanti study." This was characteristic of the man; there was nothing of the dilettante about him. All tropical maladies interested him, and his keenness in investigating their various intricacies was phenomenal and most stimulating to those working under him. At the little hospital attached to the school (the Royal Albert Dock Hospital) cases from all parts of the world were treated and much interesting research work carried out. The clinical laboratory and wards were together—the proper place for them to be—and the student could thus be instructed in every detail at first hand. It has recently been suggested that tropical schools should be situated in the tropics, but Sir Patrick was rightly not in favour of a too close application of this principle. The great advantage of a school at the centre is manifest, as cases come from every part of the world to it and many diverse maladies can be seen side by side; this is not so in the tropics. Further, more intensive work can be carried out in a temperate than in a tropical country. Still the principle of research expeditions to the tropics was always strongly advocated by him, and the necessity of the young workers having a spell abroad, to win their spurs, so to speak, has been carried out. As a clinician, Sir Patrick was always accurate and painstaking, sympathetic and kindly to his patients, and an excellent diagnostician in addition. Though often physically unfit, he never liked to miss his visits to hospital, and many times made the long journey to the Albert Docks when he should really have been in bed. To the young worker he was always kindly and sympathetic, and nothing pleased him more than to hear of some new discovery made by one of those who had been at school. Right to the end he was as keen as in his younger days, and even only a week ago was planning new schemes for another Filariasis expedition to the southern Pacific. To all who knew him intimately his loss is great and irreparable, but his name will live in the school he has founded and in the good which his discoveries have done to humanity at large.

FRANCIS DARBY BOYD, C.B., C.M.G., M.D., F.R.C.P.EDIN.,

Moncrieff-Arnott Professor of Clinical Medicine in the University of Edinburgh.

GREAT sympathy was manifested towards Professor F. D. Boyd when it became generally known at the beginning of the past winter session that illness would prevent him performing all the functions of the Moncrieff-Arnott chair of clinical medicine in the University of Edinburgh. With fine courage he carried on so far as his strength permitted him, and remained in charge of his wards in the Royal Infirmary and of his teaching there until within a few weeks of his death, which occurred on April 4th. Indeed, the last occasion on which he was out of his house was that on which the customary group photograph of his class was taken near the close of the session.

Francis Darby Boyd came from one of the families which have long been honourably connected with the progress of medicine in Edinburgh, his father being the late Mr. John Boyd, of the firm of Oliver and Boyd, for many years the publishers of the *Edinburgh Medical Journal* and of numerous medical textbooks and other works. He was born on October 19th, 1866, and so was only 55 years of age at the time of his death. He was educated at the Edinburgh Academy, and proceeded thence to the university, where he graduated as M.B., C.M. in 1888, and took his M.D. degree in 1893, gaining at that time the highly coveted gold medal for his thesis. He became a member of the Royal College of Physicians of Edinburgh in 1891, a Fellow in 1892, and a few years ago was elected to the Council, a position which he held until the close of last year. After graduation in 1888 Dr. Boyd studied abroad at Berlin and in Prague; after his return to Edinburgh he began in practice as a physician. For some years he lectured in the extra-mural school on the subjects of materia medica and therapeutics and always commanded a large following of students drawn to him by his clear and attractive presentment of a somewhat uninteresting subject. It was during these years that he carried on a series of researches in the then recently established College of Physicians Laboratory under the inspiration of the late Sir German Sims Woodhead and Professor Noël Paton (now of Glasgow University). From these researches came his well-known work on diabetes insipidus, on the pathology of albuminuria, and on various conditions of the blood in relation to nephritis and renal functions.

Professor Boyd was elected assistant physician to the Edinburgh Royal Infirmary in 1899, and he also acted as one of the physicians to the Deaconess Hospital of the Church of Scotland, becoming consulting physician to that hospital in 1913. Soon after his appointment to the staff of the Royal Infirmary he had his first experience of war service, going as he did through the South African war as physician to the Edinburgh and East of Scotland Hospital. He obtained honourable mention in dispatches, and was decorated C.M.G. in 1901. In 1910 he became major R.A.M.C. *à la suite* of the 2nd Scottish General Hospital, and when the great war began in 1914 he was mobilized and served first at Craigleith and later at Bangour (Edinburgh War Hospital). In 1917 he went to France as lieutenant-colonel in charge of the medical division of a general hospital; after his return from France early in 1918 he proceeded to Egypt and Palestine as colonel A.M.S. and consulting physician to the British army there. His work there occupied a year; he was again mentioned in dispatches, and was created a Companion of the Bath (Military Division) in 1919. Meanwhile (in 1913) he had been appointed to the senior staff of the Royal Infirmary; and in 1919, on the retirement of Professor William Russell (at age limit) Dr. Boyd was appointed Moncrieff-Arnott Professor of Clinical Medicine in the University of Edinburgh. He threw himself at once into the work of reorganizing his department after the war conditions had passed, and succeeded therein to a notable degree. Had he been spared for another ten years of active work his influence on the progress of clinical medicine in his university would indeed have been far-reaching and profound. Besides acting as examiner for the Membership of the Royal College of Physicians he was formerly a member of the Board of Examiners for entrance to the Indian Medical Service, and he

was principal medical officer to the Standard Life Assurance. He was joint editor of the Report of the Edinburgh and East of Scotland Hospital in South Africa, and he contributed to the *Edinburgh Medical Journal* "Experiences of a consulting physician on duty in the Palestine lines of communication" (1919). Amongst his recent contributions to medicine was one on "Pellagra" in 1920.

Professor Boyd was held in high estimation by the undergraduates who followed him in his wards, and he was greatly appreciated also for his post-graduate teaching. He was always clear and inspiring, was eminently sane in his judgements, and both in the infirmary and as a consultant in private practice he was consequently highly regarded and much sought after. Of his engaging social qualities and love of sport those who knew him best speak most highly, and he acted with the greatest acceptance as the secretary to the Octogenarian and joint secretary to the Harveian Dining Clubs. To his friends his death is a supreme loss, as may be gathered from Professor Alexis Thomson's tribute printed below; and the whole profession in Edinburgh mourns his passing, as was shown by the large gathering in the Dean Cemetery on the afternoon of April 7th, when what was mortal of him was consigned to mother earth. He was married in 1904, and leaves a widow and two daughters.

We are indebted to Professor ALEXIS THOMSON for the following appreciation:

Francis Boyd's friends feel his loss deeply, too deeply for words; the personal loss overshadows that which they recognize has been sustained by the school. One of his merits was that he appeared younger than his years; the writer recalls the spring golfing parties at Sullom, years and years ago, guests of the late Sir John Batty Tuke, who prided himself on selecting among the younger generation of medicos those who combined an interest in sport with the possession of brains and the capacity and intentions of using them. Tuke deserves credit for recognizing this combination; six of the eight guests became university professors, and the remaining two leading teachers and specialists in the medical school. While capable, as above suggested, of relaxing upon occasion, Boyd could bury himself in his work and stick to it as hard as any man; good sportsman as he was, he liked nothing better than his work. He also had the strength of character that combines so well with industry and ambition; his victory over a bad stammer, which had appeared likely to dissipate any hope of academic distinction, was an apt illustration of his strength of will, for, as a teacher, his diction left nothing to be desired. As a doctor, those who knew him best liked him most; he never assumed what is traditionally known as the bedside manner; as a consultant he was admirably thorough and reliable, perhaps carrying reserve to excess, and therefore, from the patient's point of view, addicted to fewer words than were desired. The social side of his character was that which appealed most to his intimates; as secretary of the Octogenarian and joint secretary of the Harveian Dining Clubs he shed his natural reserve and showed himself in his most attractive colours—one of the most genial and kindest-hearted of men. His absence will be greatly felt at their annual gatherings.

DR. THOMAS FREDERIC HIGGS of Dudley died on April 2nd, in his 87th year. He was educated at Dudley Grammar School and Sydney College, Birmingham, and took the diplomas of M.R.C.S.Eng. in 1858, L.R.C.P.Edin. and L.S.A. in 1860; he graduated M.D.St. Andrews in 1884. In 1860 he purchased a practice in Dudley, where he remained till his death. After serving as a district medical officer under the board of guardians he became medical officer of the workhouse, a post which he retained for forty-eight years, when he was appointed honorary consulting medical officer. He was appointed surgeon to the Dudley and borough police in 1862 and continued to hold that office, and was also senior honorary surgeon to the Dudley Dispensary. He took great interest in local educational affairs, was a member of the first school board for Dudley, and as a trustee of the Wesleyan Day School was subsequently co-opted on the Education Committee as a representative of the voluntary day schools. He was one of the founders of the Dudley High School for Girls and deputy chairman of the Dudley Grammar School board of governors. He also served for nearly a decade on the Dudley Town Council. Dr. Higgs, who was a Justice of the Peace, was a member and late chairman of the Dudley Division of the British Medical Association, and chairman of the Medical and Panel Committees of Dudley. He is survived by three sons and four daughters.

MR. THOMAS TURNER, F.R.C.S., J.P., of Hereford, died recently at the advanced age of 92. He was born in June, 1830, and received his medical education at University College Hospital, taking the diplomas of L.S.A. in 1854 and M.R.C.S.Eng. in 1855; he became an F.R.C.S.Eng. in 1891. After qualifying he remained for some time as demonstrator of physiology under the late Professor Sharpey, and later took up his residence in Hereford as junior partner with the late Mr. Charles Lurgen. Until his final retirement in 1919 he was never out of harness and rarely had a holiday. In 1856 he was elected to the staff of the Hereford Dispensary, and in 1863 he was appointed surgeon to the Hereford Infirmary, retaining the latter post until he reached the age limit in 1900, when he was elected to the honorary consulting staff. In the old days he was a keen Volunteer, and retired with the rank of surgeon-major. For three years he was a councillor and for twelve years an alderman on Hereford Town Council, and he was appointed a Justice of the Peace for the borough. He married the daughter of his former partner, but she predeceased him, and he had no children. By his skill, his quiet, genial, and unassuming manner he was a general favourite in Hereford, and retained until the last the place of that city and county's most trusted and popular consultant.

DR. ROBERT BAIN LOTHIAN died in Glasgow on March 30th. He was a native of that city; his father was the late Dr. John A. Lothian, who for twenty-two years was surgeon to the Glasgow Royal Infirmary. Robert Lothian was educated at Glasgow University, where he graduated M.B., C.M. in 1888. After acting as house-surgeon at the Royal Infirmary and studying for a time in London he returned to Glasgow to join his father in practice. In 1896 he was appointed casualty surgeon to the northern police district, and in 1902 he transferred to the central division, where, in addition to acting as casualty surgeon, he lectured on ambulance work to the police force and fire brigade. During the war he served in the R.A.M.C., retiring with the rank of captain. He was chairman of the Re-survey Boards of the Ministry of Pensions, Glasgow area. For many years he held a prominent place among the medical profession in Glasgow, where his loss will be greatly felt.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

Diploma in Psychological Medicine.—A short course of instruction for the D.P.M. examination will be held in Cambridge from July 12th to August 17th. The course will include lectures and practical work on psychology, the anatomy and physiology of the nervous system, morbid psychology, mental diseases, dreams, mental deficiency, etc. The fee for the full course is twelve guineas. Further particulars may be obtained from the Secretary, D.P.M. Committee, Psychological Laboratory, Cambridge.

UNIVERSITY OF LONDON.

AT the meeting of the Senate on March 22nd the Vice-Chancellor referred to the death of Dr. Augustus D. Waller, F.R.S., and said that on behalf of the Senate he had addressed a letter of sympathy to Mrs. Waller and her family on their bereavement, and had deputed Sir W. H. Willcox, chairman of the Physiological Laboratory Committee, to represent the University at the funeral.

The following were recognized as teachers of the University in the subjects and at the institutions indicated:

London Hospital Medical College: Mr. G. E. Neligan and Mr. W. S. Perrin (Surgery), Mr. F. F. Muecke, C.B.E., and Mr. N. Patterson (Oto-rhino-laryngology).

Middlesex Hospital Medical College: Mr. H. Charles (Anaesthetics), Mr. H. Watson Turner (Dental Surgery).

It was resolved to institute a University Readership in Biology tenable at Middlesex Hospital Medical School at a salary of £300; applications to be received by May 15th.

The status and designation of appointed teacher were conferred on the following:

St. Thomas's Hospital Medical School: Professor L. S. Dudgeon (Professor of Pathology), Professor J. Mellanby (Professor of Physiology), Professor F. G. Parsons (Professor of Anatomy), Professor S. G. Shattock (Professor of Morbid Anatomy).

Dr. H. W. Lyle, Dean of King's College Hospital Medical School, has been appointed a Fellow of King's College.

Professor W. D. Halliburton has been appointed a member of the board of examiners in physiology at the second examination for

medical degrees, Part II, for the remainder of the year 1921-22, in place of Professor Bainbridge, deceased.

Lord Dawson of Penn has been appointed a representative of the University at the seventh centenary celebration of the University of Padua to be held in May.

The annual service at Westminster Abbey will be on presentation day, May 4th, at 5.45 p.m. Applications for tickets, accompanied by a stamped addressed envelope, should be sent to the honorary secretary, Miss E. Jeffries Davis, 88, Gower Street, W.C.1.

Applications for grants from the Thomas Smythe Hughes Medical Research Fund to assist in original medical research must be sent in not earlier than May 1st and not later than June 15th. Further particulars can be obtained from the Academic Registrar.

The Lindley Studentship, value £120, will be awarded to a student qualified to undertake research in physiology in the Physiological Laboratory of the University. Statements of qualifications and of mode of proposed research must be sent to the Academic Registrar (from whom full regulations as to the award can be obtained) by May 1st.

A University Studentship, value £50 for one year, will be awarded to a student qualified to undertake research in physiology tenable in the Physiological Laboratory of the University, or of a school of the University. Applications must be sent to the Principal Officer (from whom further particulars can be obtained) by May 31st.

UNIVERSITY COLLEGE.

A course of four lectures on "Insects and disease" will be given at University College, London (Gower Street, W.C.1), by Sir Arthur Shipley, G.B.E., F.R.S., Master of Christ's College, Cambridge, on Tuesdays, May 2nd, 9th, 16th, and 23rd, at 5 p.m. The syllabus of the lectures is as follows: (1) Lice, their habits and life-history and their relation to disease; (2) bed-bugs and ticks as conveyers of disease; (3) flies and the way they cause and carry disease; (4) mosquitos and malaria. The lectures are addressed to advanced students of the University and others. Admission is free, without ticket.

The annual report of University College, London, states that the new building for anatomy, histology, and embryology, provided by the Rockefeller gift, has been begun, and that it is expected to be ready for occupation in March next year. The expenditure of the College on establishment account in 1921 was £150,482; the fee revenue provided £65,567. After reckoning incomes from endowments, donations, and grants from the Treasury and other public bodies, there remained a deficit of £5,185. There are, moreover, several directions in which the expenditure ought to be increased; thus an income of £15,000 a year is needed by the Department of Applied Statistics to carry on the work contemplated by its munificent founder, the late Sir Francis Galton. Capital funds to the amount of £15,000 are needed for the new chemistry laboratories.

During the year the total number of students enrolled was 3,143 (1,835 men and 1,308 women). Of these, 2,408 (1,505 men and 902 women) were taking day courses; 502 (191 men and 311 women) evening courses; 233 (138 men and 95 women) vacation courses. The day course students included 432 (326 men and 106 women) post-graduate and research students. Of the total, 212, including 76 post-graduate and research students, came from various parts of the Empire—India sending 50, Canada and New Zealand 8 each, Australia and South Africa 4 each; from European countries there were 324—59 from France, 50 from Russia, 40 from Sweden, 36 from Switzerland, 25 from Holland, 24 from Norway, 23 each from Belgium and Denmark, 14 from Italy. There were 16 from the United States of America, 10 being undergraduate and 6 research students. From other countries the largest number (23) came from Japan, of which 14 were doing post graduate and research work.

QUEEN'S UNIVERSITY OF BELFAST.

IN publishing (April 1st, p. 544) the list of successful candidates upon whom the degrees of M.B., B.Ch., B.A.O., were conferred, it should have been stated that the following had passed their examinations with second-class honours: A. H. McC. Eaton, W. S. Gibson, W. Lascelles, Mary C. Lindsay, I. H. McCaw.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary comitia of the Royal College of Physicians of London was held on Monday, April 10th, at 5 p.m., the President, Sir Norman Moore, Bt., being in the chair.

The President announced that after four years of office he did not wish to serve for a further year. He then gave a summary of the chief events in connexion with the College during the past year, and referred in detail to the ten Fellows of the College who had died during the year—Dr. G. D. Longstaff, Sir George Savage, Dr. Albert S. F. Leyton, Dr. F. A. Bainbridge, Dr. John Wickham Legg, Dr. John Harley, Dr. John Elliott, Dr. George Charles Bright, son of the celebrated Dr. Richard Bright, Dr. Ainslie Hollis, and Sir Patrick Manson.

Sir William Church proposed a vote of thanks to the President for his address and for his services to the College during the past year. Sir Norman Moore then vacated the chair, and the College proceeded to the election of a President. In the first ballot Sir Humphry D. Rolleston received 34 votes and Sir John Rose Bradford 17, 81 Fellows voting. In accordance with the by-laws of the College a further ballot took place, when Sir Humphry Rolleston received 58 votes, Sir John Rose Bradford 23.

Sir Humphry Rolleston was inducted President by the senior Fellow present, Sir W. S. Church. He then gave his faith to the College.

Various communications were received, and Sir Humphry Rolleston was appointed the representative of the College at the celebrations in honour of the seventh centenary of the University of Padua.

After a proposal by Dr. Sidney Phillips in regard to the Finance Committee of the College, the President declared the comitia closed.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY council was held on April 6th, when Sir Anthony Bowlby, President, was in the chair.

Votes of thanks were given to Mr. Alban Doran for his valuable services in continuing to arrange and catalogue the collection of surgical instruments in the Museum; and, also, to the Government of Trinidad for presenting to the College some skeletons excavated at Pale Seco.

Lives of the Fellows.—A report was received from the Library Committee stating that the Lives of the Fellows of the College had been completed. The work was carried out by the librarian, Mr. Plarr, and although only in manuscript, it is hoped at some future time to have it printed and offered for sale.

The Jacksonian Prize was not awarded. The subject for the year 1923 is "The pathology and treatment of malignant disease of the testicle."

Charles Brook (Lincoln) and William Coates (Manchester) were elected Fellows as Members of twenty years' standing.

Congratulations were sent to a College centenarian, Dr. C. H. Brooking of Paignton, who became a Member in 1843.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates passed the examination of this school held at the termination of the sixty-eighth session (January to March, 1922):

*R. W. Cilento (winner of "Duncan" medal), *J. H. Andre, *Major G. C. Dunham (U.S. army), *E. A. Mills, *G. Giglioli, *T. G. Wynne, *J. B. Kirk, D. F. G. Moore, Captain H. Hingston (I.M.S.), W. H. Peacock, Major B. Gale (I.M.S.), B. L. Joshi, E. S. E. Mack, R. T. Carr, M. S. E. Mody, Captain J. M. R. Hennessy (I.M.S.), H. C. V. Joy, G. B. Walker, V. M. Fisher, W. H. Grace, G. G. Nacleker, M. A. El Nattan, D. R. Mehta, Miss E. G. Baillie, J. J. B. Edmond, Miss M. L. Griffiths, A. Noble, Captain C. A. Wood (I.M.S.), C. Clyne, Miss H. M. Brown, A. N. El Ramli, Miss L. S. Pigeon, A. Razik, J. G. B. Brass, J. A. Griffiths, J. S. Kerr, E. F. Peck.

* With distinction.

Medical News.

THE next session of the Dental Board of the United Kingdom will commence on Tuesday, May 9th, at 2 p.m., when the chairman, Right Hon. F. D. Acland, M.P., will take the chair and give an address; it will continue to sit from day to day until the termination of its business.

AT the meeting of the Harveian Society, to be held at the Town Hall, Harrow Road, Paddington, on Thursday, April 27th, at 8.30 p.m., a discussion will take place on influenza. The speakers will be: Sir Humphry Rolleston, Sir Thomas Horder, Dr. Sidney Phillips, Dr. R. A. Young, Dr. Thoresby Jones, Dr. Beaumont, Dr. Freeman.

A FURTHER series of demonstrations of specimens in the Museum of the Royal College of Surgeons of England will commence on Friday, April 21st, when Sir Arthur Keith will demonstrate specimens of hernia, the femoral and obturator forms, and the causation of hernia. The demonstrations, which are open to advanced students and medical practitioners, take place at 5 p.m., and will be continued on Mondays and Fridays up to and including May 8th.

A MEMORABLE evening was spent by some five-and-twenty former assistants and residents of Emeritus Professor Sir Halliday Croom on April 7th, when they had the pleasure of entertaining their old "chief" to dinner at the North British Station Hotel, Edinburgh. To mark the occasion of his retirement last year from the Chair of Midwifery in the University of Edinburgh and the completion of fifty years of teaching in the Edinburgh School of Medicine, a silver salver with a suitable inscription and the engraved autograph signatures of fifty former assistants and residents was presented to Sir Halliday by the chairman, Dr. Haig Ferguson. The health of the guest was proposed by the Chairman, and the toast was supported by Dr. George Mackie, D.S.O., and Dr. George Gibson, D.S.O. Sir Halliday Croom replied in a speech full of most interesting reminiscences of his career as a teacher of midwifery and gynaecology, delivered in his happiest vein. Among those present were Dr. Godfrey (Scarborough), Dr. Hale Puckle, Dr. Scott Macgregor (Glasgow), Dr. Duncan Main (Manchuria), Dr. Donald (Carlisle), Dr. Aarons (London), Dr. Lamond Lackie, Dr. William Fordyce, and Dr. R. W. Johnstone (Edinburgh); letters and telegrams of apology and regret were received from such distant parts as Montreal, Egypt, and New Zealand.

AT the last meeting of the Council of the Royal College of Surgeons of England (reported on another page) congratulations were sent to Dr. C. H. Brooking, of Paignton, on attaining his hundredth birthday. Dr. Brooking was educated at Guy's Hospital, and took the diploma of M.R.C.S.Eng. and the L.S.A. in 1843; he graduated M.D. at St. Andrews in 1856. He formerly practised at Brixham, and is one of the last of the Volunteers of 1852; he commanded the Artillery Volunteers at Brixham in 1859. It is stated that Dr. Brooking is the oldest medical practitioner in England.

A PORTRAIT in oils of Dr. H. H. Aitchison has been presented to the Corporation of Wallsend in recognition of his public services. Sir G. B. Hunter, in unveiling the portrait in the Council chamber, traced the development of Wallsend, and paid tribute to the large part played by Dr. Aitchison in the life and work of the district. The Mayor, in accepting the portrait, also testified to the worth of Dr. Aitchison and the esteem in which he is held.

IN connexion with the ceremony of dedicating the Osler Hall, erected in Queen's Park, Toronto, as an auditorium for the Academy of Medicine, Sir Edmund Osler has presented the academy with a portrait of his brother, the late Sir William Osler.

THE members of the Surgical Union, a union of provincial surgeons, the members of which are limited in number, visited the urological departments at King's College Hospital on April 6th. The morning was spent in attending two short lectures, followed by a lantern demonstration in the medical school. The members then saw a number of cases of cystoscopy and fulguration [treatment of bladder growths in the out-patient department, and then spent some time in the radiographic department, where cases of pyelography were demonstrated. In the afternoon operations were performed on urological cases. The visitors were received by Sir John W. Thomson Walker.

THE Maternity and Child Welfare Group of the Society of Medical Officers of Health have postponed the meeting fixed for April 20th until May 18th, when Dr. R. C. Jewesbury will read a paper on "Breast feeding." The Metropolitan and Home Counties Sub-Group will meet as arranged on April 26th at 5.15 p.m. Dr. H. C. Cameron will open a discussion on "Vomiting in infancy: its meaning and treatment."

A COURSE in advanced oto-rhino-laryngology will be held at the Saint Joseph Hospital, Paris, under the direction of Dr. Georges Laurens, from April 28th to June 24th; the number of places is limited to ten, and the fee is 150 francs.

THE three societies of mental medicine at Paris have decided to organize a meeting on May 30th and 31st to commemorate the centenary of the thesis in which Bayle first described general paralysis. The meeting will be international. The subscription of 40 francs should be sent to Dr. Raymond Mallet, 284, Boulevard St. Germain, Paris.

A MEDICAL congress on accidents to workmen was recently held at Zaragoza, Spain. The Minister of Labour and the Rector of the University presided, and among the resolutions adopted was one to the effect that hernia should be regarded as entitling to two months' wages or an operation at the expense of the employer, and also that diseases contracted in hospital as a complication of an accident or contagion and death from the operation should be grounds for compensation.

DR. V. EICKEN has succeeded Professor Killian in the chair of oto-rhino-laryngology at Berlin.

THE Dutch Central Society for combating Tuberculosis recently sent out forms of inquiry. Answers were returned to 40 per cent., reporting 16,259 cases of tuberculosis (7,190 in males and 9,069 in females). As so many circulars were not answered the actual number of cases of tuberculosis is not known, but it is estimated that some 6,000 or 7,000 persons are in need of sanatorium or hospital treatment.

An account of the scheme of medical relief initiated in Russia by the American Relief Administration is given in a recent report by its medical director, Dr. Henry Beeuwkes. Dr. Beeuwkes and his assistants, who number eleven, have made a complete survey of health conditions and hospital facilities, and have drawn up a comprehensive relief plan which is already operating in Moscow, Petrograd, Kazan, Simbirsk, Samara, Saratov, Tzaritzin, Ufa, and Orenburg. "I know of no class in Russia," Dr. Beeuwkes writes, "more deserving of our admiration and assistance than the medical profession. A large percentage have died during the last three years from epidemic diseases to which they have been constantly exposed. Under-nourished and overworked, assuming the labours of their comrades who have succumbed, their weakened physical condition has made them a ready prey to infections, and their mortality rates are out of proportion to those pertaining generally. The mortality rate among physicians from typhus is reported to be 50 per cent. as against 15 per cent. for the general population."

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"I. D." asks for the name and maker of an efficient bed lift to run the patient on his bed, on to a terrace, for fresh-air treatment.

"RHEUMATIC" asks for information as to any spas in the Austrian Tyrol where treatment could be obtained for rheumatic fibrositis of hip and thigh muscles.

"BAFFLED" asks for suggestions in the treatment of the case of a professional gentleman, aged 44, who has for many years been much troubled by offensive breath. The tongue, never clean, has a coating of a brown-yellow colour, partly, perhaps, the result of pipe smoking. The teeth have been very carefully overhauled and pronounced guiltless. The bowels are regular, there is no nausea or vomiting, the appetite is fair, and dieting has been of no avail. Physical signs are negative, the lungs and nasal passages are healthy, the urine normal, and there are no headaches. Many remedies have been tried without benefit. The patient refuses to submit to a test meal, as he had an alarming experience on a previous occasion.

INCOME TAX.

"F.A.C." inquires as to the allowance due for expenses of replacement of car on the following facts: In 1914 he bought an 11.9 second-hand Belsize for £165, which he sold in April, 1921, for £170. He then purchased an 11.9 second-hand Phoenix Coupé, £450, and this he sold in November, 1921, for £230 and bought a new 11.9 Morris Oxford Coupé for £480.

*** The expense allowable on the first replacement, assuming the two cars to be of the same grade and condition, would be £450 – £170 = £280, or, allowing for the additional expense of the Coupé to-day, say £250, less any further allowance for the superior condition of the Phoenix as compared with that of the Belsize in 1914. So far as the second replacement is concerned the amount that can be claimed is the excess of the cost of a Phoenix (of same condition as that in which the car was bought in April) in November, 1921, over £230.

"C. C." earned a fee in 1920 and showed it on a declaration made for purposes of repayment. He is now being applied to by a local collector for payment of tax on the fee. Is he justified in refusing payment?

*** Yes; assuming, of course, that the untaxed fee shown on the declaration was taken into account in calculating the amount repaid. There may be a technical liability if "C. C." received a formal notice of assessment and did not lodge an objection within the prescribed time, but we can hardly imagine that claim being pressed in the circumstances.

"X." keeps one maidservant solely for practice and appointments.

*** In those circumstances the money wages and also the cost of keep and accommodation—say at the rate of 15s. a week—can be deducted as a professional expense.

"SHIP'S SURGEON" was serving out of the country from February 22nd, 1921, to March 27th, 1922, except for a period of three weeks, between voyages, when he acted as locumtenent.

*** Our correspondent appears to be liable to British income tax on the amount of his earnings less the usual allowances, and less deductions for any special expenses, such as the additional cost of uniform, if worn.

"A. W." has a resident assistant, who is of course not liable to account for tax on the value of the board and lodging received by him in kind; for this reason the local inspector is refusing to allow "A. W." to reckon the cost of that board and lodging as a professional expense.

*** The inspector has no legal justification for refusing the claim. The cost in question is clearly an allowable expense in "A. W.'s" accounts, and whether the assistant is liable for tax thereon or not is a question which in no way concerns "A. W." In the leading case of Tennant *v.* Smith which established the non-liability of benefits received in an inconvertible form the point in issue was the value of the free residence of a bank manager; he was held not liable to tax on the value of that benefit, but it was not disputed that the bank could treat the whole of the rent paid for the premises as a business expense.

LETTERS, NOTES, ETC.

MEDICAL BOOK-KEEPING.

DR. F. ARTHUR HEPWORTH (Saffron Walden) writes: "Seeker's" inquiry on this subject leads me to recommend the system of book-keeping, which is saving me much time and labour and which I find infinitely simpler than the old one—comprising day-books, ledgers, and cash-book—of my earlier experience. I use a card system for individual records and accounts, and a cash-book showing receipts on the left hand page and expenses on the right page. No day-book is kept and no ledger. The card system consists principally of white cards, size 7 inches by 5, having the patient's name and address at the top and ruled in four columns for date, particulars of case, treatment, and cash. The second column contains particulars of consultation or visit, and any clinical details which I wish to remember. Under treatment I enter prescriptions and a record of anaesthetics, operations, instrumental aid at confinements, electrical or massage treatment, articles supplied, or any other special details which are to be charged for in the last column. Fees are entered in black ink, cash payments in red ink, and when an account is paid the payment is entered in red and a red line ruled across the card. The amount paid is also entered in the cash-book at the same time. In the case of single patients this completes the booking. The whole account can be seen at a glance, and any account asked for can be made up at a moment's notice. All cards are filed in alphabetical order, subject only to the modification required to keep those for members of one family together. In the case of a family also, I file a pink ledger card in front of the group of individual cards. This ledger card contains only the totals for each quarter or half year transferred from the individual cards. This represents the whole of the posting required.

The keeping of the cash-book is important. Every amount received or paid is entered at once. The book I use is of the analytical type, having seven columns on each side. I have separate columns for private fees, panel payments, appointments like pensions' referee and life assurance, consultation fees, etc., and on the expenses side, separate columns for motor expenses, drugs, rent and taxes, and so on. The sixth column is reserved for payments and drawings on the bank, and should correspond exactly with the bank pass-book. This column can with advantage be figured in red ink. The seventh column is of course a summary of the other six.

The cash-book can be balanced on any day of the year, it can be checked by the bank pass-book, and the financial condition of one's practice can be ascertained at any time without difficulty. It is hardly necessary to say that the pass-book for my practice is separate from that for my private account.

It has been claimed that the time taken in finding a required card and in filing cards at the end of a busy evening is a serious drawback to the use of a card system. I find that this loss of time is more than compensated by the time saved in looking up old references in ledger and day-book, and by having the whole of a patient's history and cash account before me at each consultation. The time saved in posting and in making out quarterly accounts is enormous. For purposes of audit the cash-book, pass-book, and file of receipted bills are all that are required. By having the books audited once a year all the requirements of income tax inspectors, or a possible future purchaser of the practice, can be satisfied.

DR. D. J. COCHRANE (London, N.W.8) writes to recommend the "Physician's Ledger and Record," which he obtained in the first place from Canada, renewals being supplied through Messrs. H. J. Ryman, Ltd., 49, Great Portland Street, W.1.

Several other correspondents are to be thanked for supplying particulars of bookkeeping methods in reply to the inquiry.

SUICIDE IN BORDERLAND CASES.

DR. P. H. WALKER (Mquanduli, Cape Province) writes: An inconsiderable number of suicides follow a moral lapse of some kind with inability to face the consequences, or occur in the course of illness such as typhus, enteric, or pneumonia; in certain classes of society the friends may try to bluff it out that it was an accident and deny premonitory symptoms, but in most cases the subsequent inquiry elicits, with little variation, a story of noticeable alteration of manner or mental depression without real cause for it, and, further, that no doctor was called in. That is all we get generally. If there were closer observation it would probably be recorded oftener that the depression appeared to have lifted just before the end. For Dr. Luke's case in your issue of January 28th is perfectly typical. In the prodromal stage the patient may not only show, but admit to, mental depression; a highly intelligent patient may even say—I am not safe here, I ought to be under restraint; but when the real insane stage begins he declares he is now recovered, he may appear better physically, and he is now far too cunning to say anything that could be put in a lunacy certificate.

It is going too far to say that every melancholic is a potential suicide. It would greatly simplify matters if it were true. But any melancholic may be a potential suicide, and to be wise before the event would require omniscience. As I have said, however, generally no doctor is called in, and so his prescience is not tested. When it does happen that the patient is in his doctor's hands, with the uncertainty of prognosis, apart from the danger of future legal proceedings, where would two medical men be found to agree during the prodromal stage that the patient should be certified as likely to become a danger to himself? If not certified, but persuaded to become a voluntary boarder or a hostel guest, he walks out like Dr. Luke's patient, when he becomes really insane. Hostels and half-way houses are all very well for neurotics and trivial cases of unbalance, but for the real thing they are obviously useless.

HERPES AND VARICELLA.

DR. R. E. SCHOLEFIELD (Blackheath) writes: As bearing on the discussion of the relation of herpes zoster and varicella which has given rise to much correspondence in your columns, the following case may be of interest to other readers:

> On February 27th I was called to see an elderly man, about 70 years of age, who two days before had been attacked by severe pain in his right temple, sufficient to prevent his sleeping for that night. The pain was of a burning and stabbing character, and shooting through his head. The next day he noticed spots on his brow, and on the following day, when I saw him, he had a marked eruption of vesicles from the eyebrow well up to the vertex on the right side, which in places was confluent. The content of the vesicles was slightly haemorrhagic in places, in others serous. The left brow and side of scalp was free, except for one tiny spot, but over the trunk and inside the mouth were numerous vesicles, some full, and some in process of scab formation, and some just coming out, those on the trunk showing the oval zone of erythema so typical of varicella. The temperature was 100° and there was some malaise. In the next twenty-four hours a few more spots came out, and then all began to dry into the scabs seen in varicella and herpes alike. It was impossible to trace any source of infection, and as no children were in the house no further case has been seen.

There are three possible explanations of the phenomena: (1) Varicella and herpes occurring in the same subject and coming out together; (2) varicella, with an unusual distribution and with three-quarters of the spots on the distribution of a single nerve; (3) herpes pure and simple with herpetic generalized eruption. Personally I am inclined to the third explanation. Herpes has been known to exhibit the character of an infectious disorder, and epidemics in a hospital ward are not unknown. This being so, the case would be on a par with that of a generalized vaccinia following vaccination, of which I saw an example in an adult during the war, a very unusual but not impossible event. If any of your readers have seen cases bearing on the point, and making explanations (1) and (2) more likely, I should be glad to know the details.

FIRST AID TO THE INJURED.

THE Chief Secretary of the St. John Ambulance Association writes: I notice in your issue of April 8th that attention has been called to the title of the present edition of our first-aid textbook. It is quite true that the original manual was written by the late Surgeon-Major Peter Sheppard, and subsequently rewritten by Dr. R. Bruce. The present manual, however, is not based on that work.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 29, 30, 31, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page)	7	10	0
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Whole page	20	0	0

An average line contains six words.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.